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Supreme Court, U. S.
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IN THE

Supreme Court of the United States.

OCTOBER TERM, 1894.

161-10

No. 165.

GEORGE E. BELKNAP ET AL.

v.

GEORGE F. SCHILD.

BRIEF FOR APPELLEE.

J. H. MILLER,
L. T. MICHENER,
for Appellee.

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SUPREME COURT OF THE UNITED STATES.

OCTOBER TERM, 1894.

No. 165.

GEORGE E. BELKNAP, JOSEPH FEASTER, C. C. WOLCOTT, AND JESSE DIAMOND, APPELLANTS,

vs.

GEORGE F. SCHILD.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE NORTHERN DISTRICT OF CALIFORNIA.

FILED MAY 16, 1891.

(14642.)

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1 *Bill of complaint.*

To the honorable, the justices of the circuit court of the United States, for the ninth circuit, within and for the northern district of California, sitting in equity:

George F. Schild, a citizen of this the State of California, brings this his bill against George E. Belknap, Joseph Feaster, C. C. Walcott, and Jessie Diamond.

And thereupon your orator complains and says: That heretofore, to wit, before the twenty-third day of October, in the year one thousand eight hundred and eighty-three, he was the original and first inventor of a certain new and useful improvement in "caisson gates."

That the same was a new and useful invention, and consisted in the construction and combination of the various parts of the caisson gates, as fully described in the letters patent hereinafter referred to. That the
2 same was not known or used by others before the invention thereof, as aforesaid, by your orator, and at the time of your orator's application for a patent therefor had not been in public use or on sale for two years, nor abandoned, nor was it proved to have been abandoned.

That your orator being, as aforesaid, the inventor thereof, on the twenty-third day of October, A. D. 1883, upon due application therefor, did obtain the letters patent of the United States for the said invention, granting and securing to him for the full term of seventeen years from the last-named date, the full and exclusive right and liberty of making, using, and vending to others to be used, the said invention and improvement throughout the United States and the Territories thereof. Said letters patent were issued in due form of law under the seal of the Patent Office of the United States, and were signed by the Secretary of the Interior and countersigned by the Commissioner of Patents of the United States, and bore date the day and year last aforesaid, a description whereof and of
3 said invention more fully appears in said letters patent, which said letters patent are in due form of law and are ready in court to be produced by the complainant, or a duly authenticated copy thereof. That prior to the issuing of said letters patent, all proceedings were had and taken which were required by law to be had or taken previous to the issuance of letters patent granting special rights and liberties for new and useful inventions.

And your orator further shows unto your honors that always, since the granting of the said letters patent to him, he has in the exercise of the full and exclusive right and liberty so granted, as aforesaid, been ready and willing to make said inventions and to grant to others the right to use said improvements so patented, and has never acquies'ed in any invasion or infringement of his said rights.

And your orator further shows unto your honors that the respondents herein, having full knowledge of the premises and in violation of
4 your orator's exclusive right, liberty, and privilege, as aforesaid, and utterly disregarding the same, have, since the twenty-third day of October, A. D. 1883, and before the filing of this bill of complaint, without the license of your orator or any license under said letters patent, manu-

factured and used, and still continue to use, in the said State of California, caisson gates, such as are described and claimed in said letters patent, and so secured to your orator.

And your orator alleges that the caisson gates made and used by the respondents are infringements of said letters patent, and were made according to the invention therein described and thereby protected and secured to your orator, as aforesaid, and contrary to the law and form of the statutes of the United States in such cases made and provided.

And your orator further says that on or about the 17th day of March, A. D. 1886, an action at law was commenced in the United States circuit court for the district of California, ninth circuit, wherein your
5 orator was complainant and the Union Iron Works (a corporation) was defendant; that in said action the validity of said letters patent was put in issue by the pleadings and fully adjudicated on the trial thereof; that on the 26th day of August, A. D. 1886, said action came regularly on for trial before said court and a jury, and after due deliberation and the waiving of damages other than nominal on the part of the complainant, a verdict was rendered for the plaintiff and against the defendant, in the sum of $1.00, and the validity of said patent and the fact of infringement were thereby established.

And your orator further shows that he is informed and believes, and so states to be true, that the respondents in this action intend to continue to infringe upon said letters patent and to unlawfully use said invention as they have already been doing.

And your orator further shows unto your honors that he will be subject to great and irreparable injury unless he shall obtain from your honors the relief hereby sought. To the end, therefore, that the said
6 respondents may full, true, direct, and perfect answer make to all and singular the matters hereinbefore stated and charged, as fully and particularly as if the same were hereinafter repeated and they thereunto distinctly interrogated according to the best of their knowledge, information, and belief, and more especially that they may answer and set forth:

I. Whether or not the letters patent above referred to were issued by the Government of the United States to complainant for the invention herein referred to, at the time and in the manner specified; and if so, whether said letters patent are not good and valid in law.

II. Whether or not the defendants have used or are now using caisson gates which are constructed and operated in the manner described in said letters patent, and how many and how the same are constructed, and, if they differ in any material respect, wherein such difference consists.

The complainant waives an answer, under oath, to the foregoing interrogatories and to the bill. And that the said respondents may
7 answer the premises, and may be decreed to account for and pay over to your orator all such gains and profits as have or might have accrued to them from purchasing or making or using such improved caisson gates.

And your orator further prays this honorable court to assess, or cause to be assessed, the damages which he has sustained by reason of the premises and the infringements herein complained of, and that the respondents, George E. Belknap, Joseph Feaster, C. C. Walcott, and Jessie Diamond, be adjudged and decreed to pay to your orator the damages so assessed, in addition to the gains and profits above prayed for.

And your orator further prays that the respondents herein may be restrained by an injunction issuing out of this honorable court from making or using caisson gates, embracing the improvements aforesaid, so secured to your orator as aforesaid, and that the caisson gates, containing said patented improvements, and so manufactured or purchased, or in any manner obtained by them, and now in possession of said respondents, may be destroyed or delivered up to your orator, and for such other and further relief as the nature of the case may require and to your honors may seem meet.

May it please your honors to grant unto your orator not only a writ of injunction conformable to the prayer of this bill, but also the writ of subpœna, directed to the said George E. Belknap, Joseph Feaster, C. C. Walcott, and Jessie Diamond, commanding them to appear and answer this bill of complaint, and to do and receive what to your honors shall seem meet.

And your orator will ever pray, etc.

SCRIVNER & BOONE.
JOHN L. BOONE,
Of Counsel.

STATE OF CALIFORNIA,
City and County of San Francisco, ss:

George F. Schild, being duly sworn, does depose and say that he is the complainant in the foregoing bill of complaint, that he has read the foregoing bill of complaint and knows the contents thereof, and that the same is true of his own knowledge except as to the matters therein stated on information and belief, and as to those matters he verily believes it to be true.

GEORGE F. SCHILD.

Subscribed and sworn to before me this 8th day of September, A. D. 1886.

F. D. MONCKTON,
Commissioner of U. S. Circuit Court, Northern Dist. of Cal.

(Endorsed:) Filed January 20, 1887. L. S. B. Sawyer, clerk.

[*Subpœna.*]

UNITED STATES OF AMERICA.

Circuit court of the United States, ninth judicial circuit, northern district of California. In equity.

The President of the United States of America, greeting: To George E. Belknap, Joseph Feaster, C. C. Walcott, and Jessie Diamond.

You are hereby commanded that you be and appear in said circuit court of the United States aforesaid, at the court room in San Francisco, on the seventh day of March, A. D. 1887, to answer a bill of complaint exhibited against you in said court by George F. Schild, who is a citizen of the State of California, and to do and receive what the said court shall have considered in that behalf. And this you are not to omit, under the penalty of five thousand dollars.

Witness, the honorable Morrison R. Waite, Chief Justice of the Supreme Court of the United States, this 20th day of January, in the year of our Lord one thousand eight hundred and eighty-seven, and of our Independence the 111th.

[SEAL.]

L. S. B. SAWYER,
Clerk.

By ——— ———,
Deputy Clerk.

Memorandum pursuant to rule 12, Supreme Court, U. S.

You are hereby required to enter your appearance in above suit, on or before the first Monday of March next, at the clerk's office of said court, pursuant to said bill, otherwise the said bill will be taken pro confesso.

L. S. B. SAWYER,
Clerk.

11

UNITED STATES MARSHAL'S OFFICE,
NORTHERN DISTRICT OF CALIFORNIA.

I hereby certify that I received the within writ on the 21st day of January, 1887, and personally served the same on the 29th day of January, 1887, by delivering to and leaving with George E. Belknap, Joseph Feaster, and Jessie Diamond, an adult person, who is a member or a resident in the family of said defendants named therein, at Mare Island, county of Solano, in said district, a certified copy thereof.

J. C. FRANKS,
U. S. Marshal.

By L. B. HOPKINS,
Deputy.

SAN FRANCISCO, *Jany.* 31, 1887.

Endorsed:) No. 4161. U. S. circuit court, ninth circuit, northern district of California. In equity. George F. Schild *vs.* George E. Belknap *et al.* Subpœna. Filed Feb'y 1st, 1887. L. S. B. Sawyer, clerk. By F. D. Monckton, deputy clerk.

12

Affidavit of George E. Belknap.

United States circuit court, ninth circuit, northern district of California.

GEORGE F. SCHILD, COMPLAINANT,
vs.
GEORGE E. BELKNAP, JOSEPH FEASTER, C. C. Walcott, and Jessie Diamond, respondents.

STATE OF CALIFORNIA,
City and County of San Francisco, ss:

George E. Belknap, being first duly sworn, on his oath deposes and says that he is one of the defendants in the above-entitled cause; that he knows his other co-defendants and the nature of their defense to said action; that said defendants have not interposed the annexed plea to the

bill on file herein for the purpose of delay; that he has heard
13 said plea read and knows the contents thereof; that the facts stated therein as to this affiant are true, and that the facts stated therein as to his co-defendants' affiant is informed and believes to be true.

GEO. E. BELKNAP,
Commodore, U. S. N.

Sworn to before me this 3d day of May, A. D. 1887.

L. S. B. SAWYER,
Commissioner U. S. Circuit Court, Northern District of California.

(Endorsed:) Service of a copy of within affidavit and receipt of copy acknowledged this 3d day of May, 1887. Scrivner & Boone, attorneys for plff. Filed May 3, 1887. L. S. B. Sawyer, clerk; by F. D. Monckton, deputy clerk.

14 *Plea in abatement.*

In the United States circuit court in and for the 9th circuit, northern district of California.

GEORGE F. SCHILD, COMPLAINANT,
vs.
GEORGE E. BELKNAP, JOSEPH FEASTER, C. C. Wolcott, and Jessie Diamond, respondents. } In equity.

Now come the defendants above named and interpose this their plea to the bill of complaint, George Schild, complainant. Said defendants by protestation not confessing or acknowledging all or any of the matters and things in the complainant's bill mentioned to be true in such manner and form as the same are therein and thereby set forth and alleged, doth plead thereto, and for plea says that the court ought not to take cognizance of or sustain the aforesaid action, for that the defendant, George E.
15 Belknap, is now and at all times mentioned in complainant's bill on file herein was, and for a long time prior thereto had been, in the United States Navy, to wit, of the rank of commodore; that as such officer he now is and at all times since the 15th day of June, 1886, has been stationed at and in command of the United States navy-yard at Mare Island, in the State of California; that the only "caisson gate" that these defendants or either of them has any relation with, control over, or use within the State of California, is a certain "caisson gate" constructed, manufactured, controlled, and used by the Government of the United States at the said United States navy-yard at Mare Island, in the said State of California.

That the defendants C. C. Wolcott, Joseph Feaster, and Jessie Diamond are each respectively in the service of the United States, to wit: The said Wolcott is a civil engineer in the U. S. Navy: The said Feaster is an assistant naval constructor in the United States Navy, and the said
16 Diamond is an employee of the United States at Mare Island, and has been ever since the 8th day of May, 1886.

That defendants C. C. Wolcott and Joseph Feaster were in the service of the United States as aforesaid at all times mentioned in complainant's

bill herein. There is but one "caisson gate" to the knowledge of the defendants in the State of California, and that one was manufactured, built, and constructed by the naval authorities of the United States; is now owned, operated, and used by the United States at its navy-yard at Mare Island, in the State of California. That said "caisson gate" was built and constructed by the Union Iron Works, at the city and county of San Francisco, California, in pursuance of plans and specifications adopted and furnished by the Bureau of Yards and Docks, a board in the naval service of the United States, located at Washington City, D. C., and was, after being completed, to wit, on the 12th day of January, 1885, received by said Bureau, for and on behalf of the United States, and placed in use
17 and service at the United States navy-yard at Mare Island, California, where the same has ever since been, and now is used at the dry docks of said navy-yard by the United States.

That said "caisson gate" was in place and used at the Mare Island navy-yard when defendant George E. Belknap took command at said navy-yard, and the said gate had for a long time prior thereto been in use at said navy-yard, and the same is true with reference to the use of said gate as to the time the defendant Jessie Diamond entered into the service of the United States.

That neither of the defendants named in complainant's bill herein have, or pretended to have, any interest in, claim upon or to said "caisson gate" or any "caisson gate." That the defendants herein did not manufacture, construct, make, nor build the said "caisson gate" or any "caisson gate," nor did either of them. That said defendants have not used said
18 "caisson gate" for their or either of their use or benefit, and have only operated and used the said "caisson gate" at the Mare Island navy-yard of the United States as the officers, servants, and employees of the United States in the naval service thereof, and by directions of the Secretary of the Navy of the United States.

That said caisson gate was manufactured, built, and is controlled by authority of the United States and for their use and benefit, and has a all times since its completion been in the use, possession, and under the control and management of the United States, through their officers and their agents charged in behalf of the Government of the United States with the management, control, and operation of the Navy at Mare Island, in the State of California.

That the defendants have been and are now in the possession, control, use, and management of said "caisson gate" as officers and employees in the service of the United States in the United States Navy an
19 not otherwise, but as a part of the United States navy-yard at Mare Island, State of California, and as and for public uses of the Government of the United States in the exercise of its sovereign and constitutional powers.

And defendants plead these facts to the whole of said bill and demand judgment of this honorable court whether they or either of them ought to be compelled to make any answer to the said bill of complaint and pray that they and each of them be dismissed with his reasonable costs in this behalf most wrongfully sustained.

JOHN T. CAREY,
U. S. Att'y, Att'y for Defendants.

I hereby certify that I am the United States attorney for the northern district of California, and as such am solicitor and of counsel for the defendants in the foregoing cause, and that in my opinion the foregoing plea is well founded in point of law.

JOHN T. CAREY,
United States Attorney, Solicitor and of Counsel for Defendants.

20 (Endorsed:) Service of within plea in abatement and receipt of a copy thereof admitted this second day of May, 1887. Scrivner & Boone. Filed May 2d, 1887. L. S. B. Sawyer, clerk. By F. D. Monckton, deputy clerk.

21 *Plea to the jurisdiction of the court.*

In the United States circuit court, ninth circuit, northern district of California.

GEORGE F. SCHILD, COMPLAINANT,
vs.
GEORGE E. BELKNAP, JOSEPH FEASTER, C. C. Wolcott, and Jessie Diamond, respondents.

And now comes the Attorney-General of the United States, and suggests to the court, and gives it to understand and be informed (appearing only for the purpose of this motion) that the "caisson gate" in controversy in this suit was planned and constructed by the United States, is now and for a long time past, to wit, ever since its construction, has been in the possession and use of the United States as its navy-yard at Mare Island, in the State of California, and has been and is now
22 being operated at the dry dock in said navy-yard for naval purposes and the public defense.

That the United States, through its officers and agents, charged with the possession, control, and operation of the navy-yard at Mare Island, California, have at all times been in the possession, control, and use of said "caisson gate" as public property of the United States for public uses in the exercise of their sovereign and constitutional powers. That the respondents above named have no personal or private right, title, or interest in said "caisson gate," nor never had, nor did they or either of them have anything to do with the construction, use, or operation of said "caisson gate," only as officers and agents of the United States in obedience to orders of the Naval Department of said Government; neither do they make any claim of right, title, possession, control, or use of said gate other than as officers and agents of the United States. That
23 the possession, control, use, construction, and operation of said "caisson gate" has at all times been and now is in fact and law the possession, control, and use of the United States and not of said respondents or either of them; and said gate was constructed by the United States for use at said navy-yard in the building and repairing of ships for the Navy of the United States.

Therefore, without submitting the rights of the United States to the jurisdiction of the court, but insisting that the court has no jurisdiction of the subject of the controversy, for that the said "caisson gate" and its

use now is and at all times has been the property of the United States, he moves that the bill may be dismissed and all proceedings be stayed and set aside, and for such other order as may be proper in the premises.

A. H. GARLAND,
Attorney-General of the United States.
By JOHN T. CAREY,
United States Attorney.

24 JOHN T. CAREY,
United States Att'y of Counsel.

(Endorsed:) San Francisco, Sept. 5, 1887. Service of copy admitted. Scrivner & Boone, attorney' for complainant. Filed September 5, 1887. L. S. B. Sawyer, clerk.

25 *Order overruling plea.*

At a stated term, to wit, the November term A. D. 1887, of the circuit court of the United States of America, of the ninth judicial circuit, in and for the northern district of California, held at the court room in the city and county of San Francisco, on Monday the 23d day of January, in the year of our Lord one thousand eight hundred and eighty-eight.

Present: The honorable Lorenzo Sawyer, circuit judge.

GEORGE F. SCHILD
v.
GEORGE E. BELKNAP ET AL. } No. 4161.

This cause, heretofore argued and submitted to the court for consideration and decision upon the plea herein, having been duly considered, it is ordered that said plea be and the same hereby is overruled.

26 *Interlocutory decree.*

In the United States circuit court, ninth circuit, northern district of California.

GEORGE F. SCHILD, COMPLAINANT,
vs.
GEORGE E. BELKNAP, JOSEPH FEASTER, C. C. Wolcott, and Jessie Diamond, respondents. } No. 4161. Interlocutory decree.

At a stated term of the circuit court of the United States of America, of the ninth judicial circuit, in and for the northern district of California, held at the court room thereof, on the 20th day of April, A. D. 1888.

Present: The honorable Lorenzo Sawyer, circuit judge.

The bill in equity in this cause having on the 20th day of January, 1887, been filed, and the said respondents having on the 2d day of May, 1887, filed their plea in abatement, and said respondents having
27 also, on the 5th day of September, 1887, filed their plea to the jurisdiction of said court, and the court having on the 23d day of January, 1888, made an order or decree overruling said pleas, and no answer having been made or filed thereon, and the time for filing the same

not having been enlarged, and an order having been duly entered in the order book taking the said bill pro confesso, and the patent referred to in said bill having been duly examined in a former trial in this court, and judgment duly rendered therein affirming the validity of the same:

Now, at this term of said court next ensuing, the rule day when said respondents were bound and required to answer on motion of Messrs. Scrivner & Boone, solicitors for complainant, it is found and hereby ordered, adjudged, and decreed as follows, to wit:

That the letters patent of the United States of America, numbered 287,178, granted and issued to George F. Schild on the 23d day of
28 October, 1883, and being the letters patent sued on herein, are good and valid in law; that the said George F. Schild was the first and original inventor of the improvement in caisson gates, as described and claimed in said letters patent and in the specification thereto annexed, and is the exclusive owner of said patent.

That the defendants, George E. Belknap, Joseph Feaster, C. C. Walcott, and Jessie Diamond, have infringed upon the said letters patent, and upon the exclusive rights of the complainant under the same; that is to say, by making and using one or more caisson gates, containing said invention and improvements, as charged in the bill of complaint herein.

And it is further ordered, adjudged, and decreed that the complainant do recover of and from the defendants the profits, gain, and advantages which the said defendants have received or made, or which have arisen or accrued to them from the said infringement of said letters pat-
29 ent, No. 287,178, by the making and using of said machines as described in said letters patent, and also the damages which the said complainant has suffered by reason of said infringement.

And it is further ordered, adjudged, and decreed that the said complainant do recover of and from the said defendant his costs and charges and disbursements in this suit to be taxed.

And it is further ordered, adjudged, and decreed that it be referred to S. C. Houghton, esq., the standing master in chancery, of this court, residing in the city and county of San Francisco, northern district, and State of California, to ascertain and take and state and report to this court an account of the number of caisson gates made and used, or made or used by the defendants, or either of them, and, also, the gains, profits, and advantages which the said defendants or either of them have received, or which have arisen or accrued to them or either of them since the day of 188 from infringing the said exclusive right
30 of the said complainant by the making and using of the said improvement patented in said letters patent, No. 287,178, and also the damages which said complainant has sustained by reason of said infringement.

And it is further ordered, adjudged, and decreed that the complainant on such accounting have the right to cause an examination of the said defendants, and each of them, and their and each of their agents, servants, or workmen, or other witnesses as may be necessary to take such accounting, and also the production of the books, vouchers, and documents, of which said defendants, and their, and each of their agents, servants and workmen may be possessed, attend for such purposes before said master, from time to time as said master shall direct.

And it is further ordered, adjudged, and decreed that a perpetual injunction be issued in this suit against the said defendants, George E.
31 Belknap, Joseph Feaster, C. C. Wolcott, and Jessie Diamond, and each of them, and their and each of their agents, servants, clerks, and workmen, and all persons claiming or holding under or through them from using caisson gates embracing the invention or improvements set forth in the said letters patent, No. 287,178, and covered by the claims therein contained, pursuant to the prayer of the said bill of complaint.

(Signed) LORENZO SAWYER,
Judge U. S. Circuit Court.

(Endorsed:) Filed and entered April 20, 1888. L. S. B. Sawyer, Clerk.

32 *Answer.*

In the circuit court of the United States, ninth circuit, in and for the northern district of California.

GEORGE F. SCHILD, COMPLAINANT,
vs.
GEORGE E. BELKNAP, JOSEPH FEASTER, C. C. Wolcott, and Jessie Diamond, defendants.

The answer of George E. Belknap, Joseph Feaster, C. C. Walcott and Jessie Diamond, defendants to the bill of complaint of the above-named complainant herein filed.

These defendants now, and at all times hereafter saving and reserving unto themselves all benefit and advantage of exception, which can or may be had or taken to the many errors, uncertainties, and other imperfections in the said complainant's bill of complaint contained for answer
33 thereto, or unto so much and such parts thereof, as these defendants are advised is or are material or necessary for them to make answer unto, these defendants for answering, saith:

That they admit, that on the 23d day of October, 1883, the complainant, George F. Schild, obtained certain letters patent of the United States Government for certain alleged improvements in caisson gates. But defendants deny that the said alleged improvements were either new or useful. Defendants deny that the devices or combination of devices which are described in said letters patent as the said alleged improvements, and which are covered by the claims of said patent, are of any utility or value whatever.

These defendants deny that they in violation of the complainant's rights or otherwise, either since the 23d day of October, 1883, or at any other time, either with or without the license of the complainant, have
34 manufactured and used, or manufactured or used, either in the State of California or anywhere else, any caisson gates or any caisson gate such as are described and claimed in said letters patent. These defendants and each of them deny that they, or either of them, have at any time either manufactured or used or still continue to use, either in the State of California, or anywhere else, any caisson, or caisson gate, or caisson gates that contained any of the devices or combination of devices, or any improve-

ments which are described and claimed in said letters patent, or of which the exclusive right to manufacture, use, and sell, is any way secured to the complainant by said letters patent.

These defendants and each of them deny that they or any of them have at any time since the 23d day of October, A. D. 1883, manufactured any caisson, or any caisson gate, or any caisson gates of any nature or kind whatever.

35 And these defendants further deny that any caisson gates or any caisson gate which they have either made or used since the said 23d day of October, 1883, are, or is or has been, any infringement of said letters patent; or that they or it were or was made according to the invention therein described.

These defendants admit that on or about the 17th day of March, 1886, an action at law was commenced against the Union Iron Works (a corporation), and tried as alleged in said bill.

These defendants aver that they are and for several years last past have been officers and employees of the United States Government, and as such have been in charge of the navy-yard of said Government, located at Mare Island, in Solano County, in this the State of California. That about the year 1886 the said United States Government employed the said Union Iron Works to manufacture a floating caisson to be used as a gate at a

36 certain dry dock belonging to said Government at said Mare Island navy-yard. That when said caisson was completed the said action at law mentioned in said bill was commenced against the said Union Iron Works on account of its manufacture of said caisson, and for nothing else. That the said complainant was at said time and had been for several years prior thereto a draughtsman in the employ of said United States Government at said Mare Island. That the complainant well knew said floating caisson was about being built by the said Government, and then and there repeatedly stated to the officers of the said Government, and also to the officers of the Union Iron Works, that he desired that the said caisson should be built after the plans and with the alleged improvements described and claimed in his said letters patent, and repeatedly offered to the said officers of said Government, and of said Union Iron Works, that

37 if said caisson would be constructed according to his said patent that he would not charge any royalty whatever therefor, and would grant a free license to use said alleged inventions in said caisson. Defendants further aver that it was agreed by the complainant's attorneys in open court, and so adjudicated on said trial, that one dollar was all the damages which the complainant had suffered on account of the building of said caisson. That the jury found by their verdict that the damages to the complainant on account of the said building of said caisson was one dollar. A final judgment was entered for the plaintiff in said case for the said sum of one dollar, as the damages which had resulted to him from the building of said caisson, and the judgment was in the said year fully paid by the said Union Iron Works, and was satisfied.

These defendants further aver that the said caisson was delivered

38 by the said Union Iron Works to the said United States Government, and the same was put in use by the United States Government at its said dry dock at Mare Island.

These defendants further aver that as the officers, servants, and employees of the said United States Government, and in no other way, they have had the charge and immediate custody of said floating caisson. They deny that they have used, or had in their custody or control since the granting of said letters patent any caisson, or caisson gate, or caisson gates, other than the one just described, and they deny that they have used the said caisson for their own purposes, or in their own right or in any other way than as the servants and employees of said United States Government.

And further answering these defendants aver that neither they nor the said United Government was a party to said action at law, and that neither they nor the said United States Government are in any
39 manner bound or estopped by the adjudication in said case.

And further answering, said defendants deny that the said floating caisson contains the improvements or inventions, or any of the improvements or inventions, which are described and claimed in said letters patent, and deny that the same is in any respect an infringement of said letters patent. These defendants aver that on the trial of said case the jury were instructed in substance that if the said floating caisson was constructed substantially in the same manner and operated generally in substantially the same manner, as a floating caisson, made as described in the said patent would be made and operated, that in such case the said caisson would be an infringement of said letters patent.

These defendants aver that such instruction was altogether erroneous and against law for the reason that the alleged inventions
40 covered by the patent did not change or cover the general construction or general operation of floating caissons, but only covered certain new specific devices and combination of minor devices, which did not make floating caissons substantially different in either their construction or operation from other and older floating caissons which had been made and used long prior to the plaintiff's alleged inventions, and which were neither described as new nor covered by the claims of said patent. That the said instruction so given to the jury, would, if correct, have made many of the older floating caissons, which were well known and in common use, infringements of said letters patent, although, like the said caisson at Mare Island, they did not contain a single one of the changes which were contained within the alleged improvements
41 covered by said letters patent. That said instruction did in fact make the said caisson made by the said Union Iron Works an infringement of said letters patent notwithstanding that said caisson did not contain any of the improvements, or any of the changes or combinations which were described and claimed in the complainant's said letters patent.

Defendants deny that they intend to continue to infringe upon said letters patent or to use either unlawfully or otherwise the said invention, and deny that the complainant will be subjected to great or irreparable or any injury unless he shall obtain the relief sought in this action.

And these defendants, in reply to the first interrogatory of the complainant's bill, say that letters patent were issued by the United States Government to the complainant as hereinbefore admitted. As to whether said letters patent are good and valid in law or not, these defendants are not informed and are unable to answer.

42 In answer to the second interrogatory of the complainant's bill, these defendants say that, as employees of the United States Government, they are using one floating caisson at the United States dry dock at Mare Island, as hereinbefore stated; that they are not using and have not used any other caisson gate or gates whatever; that the said caisson gate is constructed and operated in the same manner in which other floating caisson gates have been constructed and operated long before and ever since the complainant made his alleged invention, and that the same differs from the caisson gates described in the complainant's patent, in that it does not contain any of the devices or combination of devices which are alleged in said letters patent to be the complainant's invention, and which are covered by the claims of said patent.

And further answering, the said defendants deny that the said
43 complainant is entitled to the relief or any part thereof in the said bill of complaint demanded. And these defendants pray the same advantage of their aforesaid answer as if they had pleaded or demurred to the said bill of complaint; and these defendants pray leave to be dismissed with their reasonable costs and charges in this behalf most wrongfully sustained.

JOHN T. CAREY,
Solicitor for Defendant, U. S. Att'y N. D. of Cal.
MILTON H. WHEATON,
Of Counsel for Defendant.

(Endorsed:) Service of the within answer and receipt of a copy thereof admitted this 11th day of June, 1888. Scrivner & Boone, solicitors for complainant. Filed 11 day of June, A. D. 1888, at request of U. S. att'y altho' default and decree have been entered. L. S. B. Sawyer, clerk.

44 *Order vacating order that default be entered and vacating decree, &c.*

At a stated term—to wit, the November term A. D. 1888—of the circuit court of the United States of America, of the ninth judicial circuit, in and for the northern district of California, held at the court room in the city and county of San Francisco, on Wednesday, the 28th day of November, in the year of our Lord one thousand eight hundred and eighty-eight.

Present: The honorable Lorenzo Sawyer, circuit judge.

GEORGE F. SCHILD
v.
GEORGE E. BELKNAP ET AL. } No. 4161.

Upon motion of John T. Carey, esq., U. S. attorney and attorney for defendants, and upon consent of counsel for plaintiff, it is ordered that the default heretofore entered against respondents and the decree heretofore entered *pro confesso* against said respondents be and the same
45 is hereby vacated, annulled, and set aside, and that the answer heretofore filed shall be deemed to have been filed in time and treated in all respects as if filed in due time, and that said cause shall be heard and determined by the court upon the bill of complaint on file,

said answer and the testimony taken before the master in chancery reported to the court, and now on file. By consent of the respective counsel, it is further ordered that the filing of a replication be and the same is hereby waived, and that the title of the bill of complaint herein be amended by inserting the word "northern" before the word "district," so that it shall read "northern district of California."

This cause coming on this day to be heard, John L. Boone, esq., appeared for complainant, and John T. Carey, esq., U. S. attorney, and M. A. Wheaton, esq., for respondents, and was argued by the respective counsel, and submitted to the court for consideration and decision.

46 *Interlocutory decree.*

In the United States circuit court, in and for the northern district of California, ninth circuit.

GEORGE F. SCHILD, COMPLAINANT, *vs.* GEO. E. BELKNAP, JOSEPH FEASTER, C. C. Wolcott, and Jessie Diamond, respondents.	No. 4161, interlocutory decree.

At a stated term of the circuit court of the United States of America, of the ninth judicial circuit, in and for the northern district of California, held at the court room thereof, in the city and county of San Francisco, on Monday, the 24th day of June, A. D. 1889—present, the honorable Lorenzo Sawyer, circuit judge—

This cause having come on to be heard upon the bill of complaint herein, the answer of the defendants, the replication of the complainant, and the proof, oral, documentary, and written, taken and filed in
47 said cause, and having been argued by counsel for the respective parties and submitted to the court for consideration and decision;

Now, therefore, on consideration thereof, it is ordered, adjudged, and decreed, and the court doth hereby order, adjudge, and decree as follows, to wit:

That the letters patent of the United States of America, numbered 287,178, granted and issued to George F. Schild on the 23d day of October, 1883, and being the letters patent sued on herein, are good and valid in law; that the said George F. Schild was the first and original inventor of the improvement in caisson gates, as described and claimed in said letters patent, and in the above specification thereto annexed, and is the exclusive owner of said patent

That the defendants, George E. Belknap, Joseph Feaster, C. C. Walcott, and Jessie Diamond have infringed upon the said letters pat-
48 ent, and upon the exclusive rights of the complainant under the same—that is to say, by making and using one or more caisson gates containing the invention and improvements covered and protected by the first and fourth claims of said letters patent, as charged in the bill of complaint herein.

And it is further ordered, adjudged, and decreed that the complainant do recover of and from the defendants the profits, gains, and advantages which the said defendants have received or made, or which have arisen or accrued to them from the said infringement of said letters patent, No. 287,178, by the making and using of said machines as described in said letters patent, and also the damages which the said complainant has suffered by reason of said infringement.

And it is further ordered, adjudged, and decreed that the said complainant do recover of and from the said defendants his costs and charges and disbursements in this suit to be taxed.

49 And it is further ordered, adjudged, and decreed that it be referred to S. C. Houghton, esq., the standing master in chancery of this court, residing in the city and county of San Francisco, northern district, and State of California, to ascertain and take and state and report to this court an account of the number of caisson gates made and used, or made or used by the defendants, or either of them, and also the gains, profits, and advantages which the said defendants or either of them have received or which have arisen or accrued to them or either of them since the 23d day of October, 1883, from infringing the said exclusive right of the said complainant by the making and using of the said improvement patented in the first and fourth claims of said letters patent, No. 287,178, and also the damages which said complainant has sustained by reason of said infringement.

50 And it is further ordered, adjudged, and decreed that the complainant on such accounting have the right to cause an examination of said defendants, and each of them, and their and each of their agents, servants or workmen, or other witnesses as may be necessary to take such accounting, and also the production of the books, vouchers, and documents of which said defendants, and their and each of their agents, servants, and workmen may be possessed, attend for such purpose before said master, from time to time as said master shall direct.

And it is further ordered, adjudged, and decreed that the said defendants, George E. Belknap, Joseph Feaster, C. C. Wolcott, and Jessie Diamond, and each of them, and their and each of their agents, servants, clerks, and workmen, and all persons claiming or holding under or through them, or either of them, are hereby enjoined and forbid from making or using caisson gaits embracing the inventions or improve-

51 ments set forth in the said letters patent No. 287178, and covered by the first and fourth claims therein contained, pursuant to the prayer of the said bill of complaint, and that this injunction is, and shall be, perpetual.

(Signed) LORENZO SAWYER,
Judge U. S. Circuit Court.

(Endorsed:) Receipt of a copy of the within decree admitted this 20th day of July, 1889, reserving the right to object to the same. Jno. T. Carey and M. A. Wheaton, sol. for respondents. Filed and entered July 25th, 1889. L. S. B. Sawyer, clerk.

52 *Master's report.*

United States circuit court, northern district of California.

GEORGE F. SCHILD
v.
GEORGE E. BELKNAP *et al.*

In the matter of the reference to master for accounting.
Master's report comprising:

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53 In the United States circuit court in and for the *the* northern district of California, ninth circuit.

GEORGE F. SCHILD, COMPLAINANT,
vs.
GEO. E. BELKNAP, JOSEPH FEASTER, C. C. Wolcott, and Jesse Diamond, respondents. } No. 4161. Interlocutory decree.

At a stated term of the circuit court of the United States of America, of the ninth judicial circuit, in and for the northern district of California, held at the court room thereof in the city and county of San Francisco, on Monday, the 24th day of June, A. D. 1889, present, the honorable Lorenzo Sawyer, circuit judge.

The cause having come on to be heard upon the bill of complaint herein, the answer of the defendants, the replication of the com-
54 plainant, and the proof, oral, documentary, and written, taken and filed in said cause, and having been argued by counsel for the respective parties and submitted to the court for consideration and decision:

Now, therefore, in consideration thereof, it is ordered, adjudged, and decreed, and the court doth hereby order, adjudge, and decree as follows, to wit:

That the letters patent of the United States of America numbered 287178, granted and issued to George F. Schild on the 23d day of October, 1883, and being the letters patent sued on herein, are good and valid in law; that the said George F. Schild was the first and original inventor of the improvement in caisson gates, as described and claimed in said letters patent and in the specification thereto annexed, and is the exclusive owner of said patent.

That the defendants, George E. Belknap, Joseph Feaster, C. C. Wolcott, and Jessie Diamond, have infringed upon the said letters
55 patent and upon the exclusive rights of the complainant under the same; that is to say, by making and using one or more caisson gates containing the invention and improvements covered and protected by the first and fourth claims of said letters patent, as charged in the bill of complaint herein.

And it is further ordered, adjudged, and decreed that the complainant do recover of and from the defendants the profits, gains, and advantages which the said defendants have received or made, or which have arisen or accrued to them from the said infringement of said letters patent No. 287178, by the making and using of said machines as described in said letters patent, and also the damages which the said complainant has suffered by reason of said infringement.

And it is further ordered, adjudged, and decreed that the said complainant do recover of and from the said defendants his costs and charges and disbursements in this suit to be taxed.

56 And it is further ordered, adjudged, and decreed that it be referred to S. C. Houghton, esq., the standing master in chancery of this court, residing in the city and county of San Francisco, northern district and State of California, to ascertain, and take, and state, and report to this court an account of the number of caisson gates made and used, or made or used by the defendants, or either of them, and also the gains, profits, and advantages which the said defendants or either of them have received, or which have arisen or accrued to them or either of them since the 23d day of October, 1883, from infringing the said exclusive right of the said complainant, by the making and using of the said improvement patented in the first and fourth claims of said letters patent No. 287178, and also the damages which said complainant has sustained by reason of said infringement.

57 And it is further ordered, adjudged, and decreed that the complainant on such accounting have the right to cause an examination of said defendants, and each of them, and their and each of their agents, servants, or workmen, or other witnesses as may be necessary to take such accounting, and also the production of the books, vouchers and documents of which said defendants, and their and each of their agents, servants, and workmen may be possessed, attend for such purpose before said master, from time to time as said master shall direct.

And it is further ordered, adjudged, and decreed that the said defendants, George E. Belknap, Joseph Feaster, C. C. Walcott, and Jessie Diamond, and each of them, and their and each of their agents, servants, clerks, and workmen, and all persons claiming or holding under or through them or either of them, are hereby enjoined and forbid from making or using caisson gates embracing the invention or improvements set forth in the said letters patent No. 287178 and covered by the first and

58 fourth claims therein contained, pursuant to the prayer of the said bill of complaint, and that this injunction is and shall be perpetual.

(Signed) LORENZO SAWYER,
Judge U. S. Circuit Court.

(Endorsed:) Receipt of a copy of the within decree admitted this 24th day of July, 1889, reserving the right to object to the same. John T. Carey and M. A. Wheaton, sol. for defendants. Filed and entered July 25th, 1889. L. S. B. Sawyer, clerk.

I, L. S. B. Sawyer, clerk of the circuit court of the United States for the northern district of California, do hereby certf y the foregoing to be a full, true, and correct copy of an original interlo utory decree, heretofore

filed and entered as amended, in the suit entitled Geo. F. Schild v. Geo. E. Belknap, et al., No. 4161, in said circuit court.

59 Attest my hand and the seal of said circuit court, this 13th day of October, A. D. 1890.

[SEAL.] L. S. B. SAWYER,
Clerk,
By F. D. MONCKTON,
Deputy Clerk.

60 *Report.*

In the circuit court of the United States, ninth circuit and northern district of California.

GEORGE F. SCHILD,
vs.
GEORGE E. BELKNAP, ET AL. } No. 4161.

In the matter of the reference to the master for accounting.

Master's report.

To the honorable the circuit court of the United States for the ninth circuit and northern district of California.

In pursuance of the decretal order of this honorable court, filed and entered in the above-entitled cause on the 25th day of July, 1889,
61 directing to the undersigned as master in chancery of said court a reference for accounting in said cause, I, the said master, having been attended at several times by the counsel for the respective parties to said cause, and having taken the testimony of the several witnesses produced in this behalf, and having examined the said testimony and the other evidence submitted, do hereby and herewith report said testimony, and the exhibits introduced in connection herewith, and do also report:

By agreement of counsel, the proceedings upon the reference are to be considered as having been taken upon the interlocutory decree herein as amended.

It is shown by uncontradicted evidence that in 1872 Calvin Brown, at that time civil engineer in charge of the department of yards and docks at the United States navy-yard at Mare Island, and in charge of a Government dock then and there under construction, prepared plans for a
62 caisson gate for said dock, after the style of such gates in use at other Government navy-yards; that at the request of the respondent Walcott, who was the successor in office of Brown, complainant made a set of plans of a caisson gate containing his patent improvements, of which plans Walcott, with complainant's consent, had a copy made; copied complainant's estimate of the cost of a caisson gate if made according to his plans, and this estimate Walcott forwarded to the authorities at Washington, with a recommendation that complainants's plan be adopted; that a caisson gate was made upon complainant's said plans, modified by the governmental officials, and put into use in 1884, for the making and using of which said caisson gate respondents have herein been adjudged to be infringers upon the rights secured to complainant by the patent sued on; that the cost of said caisson gate, including a pump, was sixty thousand dollars, and
63 that a caisson gate built according to Brown's plans would have cost at least one hundred thousand dollars.

The complainant estimates that, over and above the saving in original cost, a futher saving has resulted to respondents from the use of the infringing caisson gate; but these estimates do not appear to be founded on a sufficiently substantial basis to entitle them to be regarded as proof. The first item is for repairs, including repairs of pump, which it is therein claimed Schild's gate does not possess, while as matter of fact respondents' gate is supplied with a pump. As to the second item, cost of painting, the estimate is shown to be excessive. The remaining item—cost of handling—was upon the argument withdrawn by complainant. It is therefore considered that, upon the proof made, the measure of damages herein should
64 be limited to the difference in cost between the infringing caisson-gate, as constructed, and any other available style of gates which the evidence shows would have answered the respondents purpose, and which they were at liberty to build.

It is in proof that since the entry of the interlocutory decree herein the respondents have removed from their gate, so far as possible, the devices included in the combinations covered by the claims of complainant's patent, such changes having been made at the suggestion of their counsel for the avowed purpose of evading the patent. Respondents' counsel contends that the actual invention of complainant, as described and claimed in his patent, is confined to an improved arrangement of devices designed to facilitate the operation of a caisson gate, and that his damages must, consequently, be measured by the advantage resulting from the adop-
65 tion of such improvements by the respondents in their gate; that the caisson gate, in the altered condition, is not covered by complainant's patent; and that respondents were at liberty to have originally constructed the gate in its present condition, and that, as that could have been done at a cost not exceeding the actual cost of the gate, complainant can recover nominal damages only. If we accept this interpretation of the patent, and hold that it covers only devices combined and arranged to give efficiency of operation to a caisson gate, it is to be observed that in order practically to apply and give effect to such devices, the complainant devised an improved form of caisson gate, of exeeeding simplicity and cheapness, and the several valuable and economical features of his structure are included in the combination patented; and that these features were
66 adopted by the respondents, from the plans furnished by the complainant himself. As originally built, respondents' gate was substantially modeled after that described in the patent; and the changes which have been made since the entry of the interlocutory decree have left the gate in such condition that, should it be deemed desirable, it could be restored to its original state. In fact, all the elements of the combination covered by the fourth claim of the patent, to wit: the plate, A, the body, B, and the double wicket-gate, G, covering on each side openings, G′, in the plate, remain in the structure as altered, though the wicket-gates have been bolted fast to the plate. Their structure, even when stripped of the devices for operating it, could not be considered as among those known to respondents, and which they would have been at liberty to adopt, for their knowledge in relation to it was derived from the complainant's patent and plans. It is true that in the case in chief Walcott testified that
67 early in 1882, he received from a Mr. Prindle, who was connected with the New York navy-yard, drawings of a proposed deep-keel

caisson-gate, and another witness testified that a deep-keel caisson was built and put into use at the Baltimore navy-yard. But it appears from the testimony of Walcott, in the case in chief, that after he had received and examined detailed drawings of the Prindle caisson gate, he recommended the adoption of Schild's plans. He must, therefore, have considered them to be preferable from some standpoint—possibly by reason of a saving in cost. At all events, no evidence was introduced by respondents, either in the case in chief or upon the accounting, as to the cost of the caisson gates last above mentioned, or of any other; and, taking into consideration the sources of knowledge of the respondents upon the subject, and the importance of this question to them, from their silence in this regard it
68 must be assumed that they knew of no available form of caisson gate, excepting Schild's, which could have been built at a less cost than could that shown on Brown's plans.

By availing themselves, therefore, of the patent and plans of complainant the respondents unquestionably saved a large sum, for, so far as appears from the evidence at the time of the construction of their gate, the cheapest practicable caisson gate known to them, excepting complainant's, was that delineated upon Brown's plans, and from the evidence it is fairly to be presumed that, had they not concluded to adopt complainant's plans the respondents would have built their caisson gate after those submitted by Brown, which had for their basis a gate of comparatively recent construction in use in the Brooklyn navy-yard.

It is insisted that as these respondents have had no connection with the infringing gate excepting as officials of the Government
69 they can not be held personally liable. The objection is of equal force if directed to the question of infringement. Obviously, if the respondents have infringed upon complainant's rights under his patent they are liable for resulting damages and by its judgment the court has determined that they are infringers, and has directed the master to assess the damages.

Accepting, then, Schild's undisputed testimony that the lowest sum for, which a caisson gate, made according to Brown's plans, could have been obtained by the respondents was one hundred thousand dollars, and that the actual cost of the caisson gate which was made and put up into use was, including cost of pump, sixty thousand dollars; it appears that the gains and profits—that is to say, the saving—resulting to the respondents from the making of the infringing caisson gate amount to the difference
70 between the sums mentioned.

I therefore find and do report that one caisson gate was made and used by the respondents; that the gains, profits, and advantages which have arisen and accrued to them since the 23d day of October, 1883, from infringing the exclusive right of complainant, by the making and using of the improvement patented in the first and fourth claims of complainant's letters patent No. 287178, amount to forty thousand dollars, and that no damages in addition to said gains, profits, and advantages have been proved.

Respectfully submitted.

S. C. HOUGHTON,
Master.

71 *Deposition of Geo. F. Schild.*

In the circuit court of the United States, ninth circuit, in and for the northern district of California.

GEORGE F. SCHILD
vs.
GEORGE E. BELKNAP ET AL. } In the matter of the reference to the master for accounting.

TUESDAY, *February 11th*, 1890.

Present: Mr. Boone and Mr. Miller, of counsel for complainant; Mr. Carey and Mr. Wheaton, of counsel for respondent.

Examination-in-chief of George F. Schild on behalf of complainant:

Q. 1. (By Mr. BOONE.) You are the complainant in this case, are you, Mr. Schild?

A. I am.

Q. 2. Do you know the caisson gate built by the Union Iron Works and in use at Mare Island?

A. I do.

Q. 3. When was that caisson gate built?

A. It was built in 1884, I believe it was. The contract was given to the Union Iron Works in the end of April, 1884, and it was delivered to the navy-yard in July, 1884.

Q. 4. Do you know who made the plans upon which that gate
72 was constructed?

A. Well, partially I made the plans and partially the Bureau of Yards and Docks in Washington.

Q. 5. At that time where were you employed?

A. As draughtsman in the construction department of the navy-yard at Mare Island, in California.

Q. 6. Do you know whether or not any other plans were prepared for the gate for that place for that purpose?

A. I do.

Q. 7. Well, state what you know about it.

A. In the year 1872 to 1873 Mr. Calvin Brown, at that time civil engineer at the navy-yard at Mare Island, had plans made for a caisson to be used at the dock at that time building at the navy-yard.

Q. 8. Did you see those plans?

A. I did.

Q. 9. Now, describe what they represented.

The MASTER. What is the object of this, Mr. Boone?

Mr. BOONE. To show that at the time the Government had adopted Schild's invention plans had already been made for a gate for the Mare Island dry dock, and I desire to show what those plans represented and what the cost of a caisson gate built according to those plans would be, and that those plans were afterwards discarded and those made according to Mr. Schild's patent were adopted, and a caisson was built according to the patent at a very much reduced cost.

73 Mr. WHEATON. I object to all that testimony as being irrelevant so far as these defendant' are concerned. If anything was saved in

the cost of the caisson gate to the United States Government it was not saved to these defendants. The rule of damages is confined to either the profits made by the defendants or the actual money damages sustained by the complainant in some other way, and whatever was saved by the Government or gained by the Government by adopting Mr. Schild's plans would be no element of damage in a case where the Government is not a party.

The MASTER. The objection will be overruled. The very gist of the whole proceeding is involved in this question and questions leading out of it, as I understand it.

Mr. WHEATON. I also object for the further reason that plans made in 1872 and 1873 by one set of officers have nothing to do with the plans which might be made and adopted by another set of United States officers eleven or twelve years later.

The MASTER. At this stage of the examination we can not tell where this branch of the inquiry may lead to. It may lead to evidence which is the strongest and most direct bearing upon the issue here. The objection is overruled.

Mr. WHEATON. We will save an exception to the rulings of the master.

(Q. 9 read.)

74 A. The plans represented a caisson of the usual old style, as the caissons were at the Boston navy-yard and the New York navy-yard and at Norfolk, being a deep vessel, with a very narrow, shallow keel.

Q. 10. Do you know what the cost of constructing and building a caisson gate would be if the gate was constructed according to those original plans?

A. I do. Mr. Walcott took up these plans constructed by Mr. Calvin Brown and had an estimate made of the cost, and I know one item——

Mr. WHEATON (interrupting). I object to his testifying in relation to estimates. If he knows of his own knowledge what it cost that is a different thing.

The MASTER. He has stated that he knows the cost. Suppose you ask him, Mr. Wheaton, as a basis for an objection, how he knows.

Q. 11. (By Mr. WHEATON.) Have you had any experience in the building of caissons; any personal experience, I mean?

A. Not personal experience in building caissons, but I am a naval architect, and am supposed to know what iron structures cost.

Q. 12. Did you make an estimate yourself of what it would cost to make a caisson after the plans adopted by Calvin Brown in 1872 or 1873?

A. I did.

Q. 13. When did you make that estimate?

75 A. Partially during the time the draughtsman was getting up the plans, and I knew the weights of the material entering the structure, and partially afterwards when I got up a new set of plans that would better take the place of it.

Q. 14. Can you now state what difference there would be in cost between building a caisson in 1872 and 1873, at the time you made that estimate, and the cost of making the same caisson in 1884, when material was much cheaper?

A. There might be a difference of five or——

Q. 15. (Interrupting.) The question is not whether there might be a difference, but do you know what that difference would be?

A. I don't remember exactly now the dates, but labor was about the same as at that time. There was very little difference in the cost of labor.

Q. 16. The question is whether you know what the difference in cost would be or not. Do you or not know?

A. I stated there would be a difference of——

Q. 17. (Interrupting.) Do you or not know. You can answer that question by yes or no. Do you know?

A. Yes, sir; I do.

Q. 18. Did they have facilities in 1872 or 1873 for building a caisson as cheaply as the Union Iron Works could build it with their immense plant of machinery in 1884?

A. They had the same facilities.

Q. 19. Do you mean to testify that they had the same facilities here in 1872 and 1873 for building that caisson that they had in 1884 at the Union Iron Works where it was built?

A. I am not acquainted with what kind of a plant the Union Iron
76 Works had at that time, but I was living up at the navy-yard at Mare Island, and I know what it was there.

Q. 20. The caisson was not built there, was it?

A. It was intended to be built there. It was supposed to be built there, that caisson that Mr. Calvin Brown constructed.

Q. 21. Do you now know what a caisson could have been built for by contract in 1884 if built after the plans made by Calvin Brown, or adopted by him, in 1872 or 1873?

A. I know there would be a slight difference in the cost.

Q. 22. Do you know what that difference would be?

A. Well, I don't know it exact. There is nobody could say it exact out of his head, without taking into account the cost of material at the different times.

Q. 23. Are you aware of the fact that in 1884 the Union Iron Works had an immense plant of machinery and apparatus for handling heavy castings and heavy iron weights which was not on the coast here in 1872 or 1873 at any place?

A. You are mistaken. We built, for instance, at Vallejo the iron monitor Monadnock. It was built by contract at Vallejo, and was a great deal larger structure than this caisson.

Q. 24. When was the Monadnock built?

A. She was built—well, she was under construction a good many years. I don't know when she was turned over to the Government, but she was built in the end of 1882 or 1883. She was under construction a good many years. I don't know the dates.

77 Q. 25. The Monadnock was originally a monitor war vessels, built in the East, was she not?

A. The frame was constructed in the East, but she was not——

Q. 26. (Interrupting.) Wasn't the Monadnock originally a vessel that was built in the East, and used in the war in the East?

A. Oh; that that you refer to was an old wooden vessel. This new iron monitor was one like it in name only.

Q. 27. You don't mean to say that the Monadnock that came from the East to this port was a wooden vessel, do you?

A. Yes, sir; she was, and she was broken up, too.

Q. 28. Didn't that Monadnock, when she came out here, lie here in the bay for a while, and was visited by people, and didn't she show above water where cannon balls had struck her and bent in her iron armor where it was more than twelve inches thick at least?

A. Well, she certainly had iron armor around her, but she was a wooden vessel with iron armor around her. Her hull was wood, and she was a wooden vessel; she had wooden beams and a wooden frame, but the armor was iron, and the guns were iron, too.

Q. 29. Are you aware of the fact that the Union Iron Works is an establishment here which has very large and very extensive apparatus adapted especially to the handling of heavy machinery and heavy weights?

A. I don't deny it. I say, yes.

78 Q. 30. Hasn't that establishment traveling railways overhead by which it can pick up any heavy piece of iron from any part of the ship and carry it and lay it at another place around the works by steam power?

A. It has.

Q. 31. With such an apparatus couldn't those works take a contract in 1884 for building that caisson much cheaper than they could in 1872 or 1873?

A. At that time they didn't have any shipyard whatever, the Union Iron Works. The Union Iron Works didn't start a shipyard until about 1882.

Q. 32. Couldn't the Union Iron Works in 1884 construct a caisson with the machinery and apparatus which they then possessed much cheaper than any other establishment on the Pacific coast could have built it in 1872 and 1873?

A. They could.

Mr. WHEATON. I submit that his estimates of cost of building a caisson in 1872 and 1873 is not a sufficient criterion of what would be the cost of one made in 1884, built by the Union Iron Works, to form an estimate of damages upon.

Mr. BOONE. Unless we should show the difference, which we propose to do.

The MASTER. It seems to me that the testimony sought to be elicited is in the direction of determining the cost of some other appliance which could be used as against the cost of the complainant's patented appliance, and for that reason I will overrule the objection.

79 Mr. WHEATON. I have another ground of objection to introduce here, that these defendants did not build the caisson. These defendants have only been charged with using it, and the complainant in this case brought an action for damages and recovered his damages against the Union Iron Works for building the caisson, and that judgment has been paid, and there has, therefore, been one satisfaction to the complainant of all damages growing out of any infringement on the patent by the building of the caisson and the recovery which he had against the Union Iron Works, and the payment of the judgment which he recovered therein. These defendants are not charged with any infringement of the patent by the building of a caisson, but only for the using of it after it was built and delivered to the Government.

The MASTER. In relation to that I am again concluded by the terms of the interlocutory decree and the order of reference therein contained, in which the master is directed to ascertain and report and account the number of caisson gates made and used or made or used by the defendants, or either of them, and so forth, and therefore I will have to admit the testimony, although the point that is raised in the objection may properly be raised upon the argument in this proceeding, if it appears that the complainant has already recovered damages for the making of this caisson.

Mr. WHEATON. Then I insist, in the order of taking proof under that interlocutory decree, that they must first show that the defendants
80 have built any caisson before they can show any damages accruing for the building of the caisson.

The MASTER. In a legal sense the defendants may have made it, although somebody else constructed it for them. Many of the objections that have been raised by Mr. Wheaton will very properly come in upon argument in this proceeding, whether this testimony is admitted or not. I do not think it is equitable to cut off any testimony that may by possibility be pertinent to the issue in any view that may be taken of it by the master or by the court. It has been my practice to be liberal in the admission of evidence, unless it is plainly incompetent, or can have no possible bearing upon the issues. In other words, if I have any doubt as to the admissibility of evidence, I resolve it in favor of the admission of the evidence; but it does not necessarily follow because evidence is admitted which is not proper or pertinent that the evidence is bound to be considered. I think the better way, so far as this particular subject-matter that has been touched upon is concerned, will be to let the witness be examined in relation to those matters, and then determine on the argument whether or not the evidence is relevant to the issue or issues in the proceeding. The fact that the testimony has been taken will not cut any figure in the case if, under the law, it is found that it ought not to be considered.

Mr. WHEATON. If there is going to be any evidence taken
81 as to the cost of building those caissons in 1873, I call now for the production of those plans, and I object to any oral testimony being given unless they are produced.

The MASTER. Oral testimony will be taken for what it may be worth, and if it is in any way dependent upon those plans it will not be given weight unless the plans are produced. The objection is overruled.

Mr. WHEATON. We will save an exception.

Q. 33. (By Mr. BOONE.) Did you examine those plans of 1872?

A. I did.

Q. 34. In whose possession were they at the time you examined them?

A. In the possession of the office of yards and docks of the navy-yard at Mare Island.

Q. 35. Have you seen them since that time?

A. Yes, sir.

Q. 36. When?

A. I saw them in the year 1882.

Q. 37. Where were they then, and in whose possession?

A. They were in the possession of the office of yards and docks.

Q. 38. Do you know where they are now?

A. I couldn't say. I expect they are there yet.

Q. 39. Now, at the time these plans were made, which you say was in 1872, who did you talk with regarding the proposed gate represented by those plans, in relation to its construction and its cost of construction?

A. I talked to the draughtsman who was getting up the plans, and also a short time afterwards, in 1873, to Calvin Brown, when I showed
82 him my model and called his attention to it, that my style of caisson——

Mr. WHEATON (interrupting). I object to any conversation between the witness and any other person, unless it was some of these defendants, in regard to these plans.

The MASTER. He was asked who he talked with, that is all. He need not state what was said, but just who he talked with.

The WITNESS. I talked with Calvin Brown, at that time a civil engineer at the navy-yard at Mare Island, and also Mr. Much, naval constructor at the navy-yard at Mare Island.

Q. 40. Did you ever talk with Mr. Walcott about it?

A. I did.

Q. 41. When was that?

A. A short time after Mr. Calvin Brown retired and Mr. C. C. Walcott took charge of the department of yards and docks at the navy-yard at Mare Island.

Q. 42. In what year was that?

A. In 1882, I believe.

Q. 43. Was it before or after the construction of the gate which is now in use at Mare Island?

A. It was before that time, before the construction of the gate.

Q. 44. What was your conversation with Mr. Walcott?

A. Commodore Phelps, at that time commandant at the navy-yard at Mare Island, had showed to Mr. Walcott, and also to Mr. Monocal, then civil engineer of the Navy, my model, and Mr. Walcott came
83 into my office and asked me to prepare a set of plans of a caisson of my invention.

Q. 45. Did you do so?

A. I did.

Q. 46. What did you do with them?

A. Mr. Walcott had my plans copied.

Q. 47. You delivered them to Mr. Walcott, did you?

A. I didn't deliver my plans, I only gave him permission to copy my plans and specifications.

Q. 48. Go on and state what Mr. Walcott did and what he said.

A. Well, Mr. Walcott said he liked my style of caisson a good deal better than that of the old style, and he had an estimate made of the cost of the caisson what Mr. Calvin Brown had got up.

Q. 49. Do you know what that estimate was?

A. I know of one item. Mr. Campbell, at that time foreman boilermaker of the department of steam engineers, made an estimate that the iron hull alone of the caisson constructed by Calvin Brown would cost some eighty-one to eighty-two thousand dollars, and I know the wood work, pumps, boilers, and so forth, would have brought the cost up to one hundred and fifteen to one hundred and twenty thousand dollars.

Q. 50. Now, was anything said by Mr. Walcott about the cost of constructing a caisson gate under those plans drawn by Calvin Brown in 1872?

A. I don't recollect that he spoke to me about it direct, except in his report accompanying my plans he stated himself ——

The MASTER. You needn't state what he said in that.

84 Q. 51. (By Mr. BOONE.) Have you got that report?

A. I have, in one sense; he copied my estimates and forwarded them under his name.

Q. 52. (By Mr. WHEATON.) Who did that?

A. Mr. Walcott.

Q. 53. (By Mr. BOONE.) He copied your estimates; copied them into what?

Q. 54. Q. (By the MASTER.) Estimates of what?

A. Estimates of the cost of that caisson of my invention; and he forwarded them as his report to Washington, and I have those original estimates.

Q. 55. (By Mr. BOONE.) After these plans of your invention were copied by Mr. Walcott, was anything said about prosecuting further the work on the plans formerly made by Calvin Brown?

A. Well, they were discarded. I don't know that he ever made any improvement or *am*de any changes.

Q. 56. Do you know and can you estimate, as a mechanical engineer, what the cost would be, in 1884, of constructing a caisson gate according to the plans of the gate made by Mr. Calvin Brown in 1872?

A. Yes, sir.

Q. 57. State what your estimate is?

Mr. WHEATON. I object to that as irrelevant.

The MASTER. The objection is overruled.

Mr. WHEATON. We will save an exception.

A. I might have built the caisson in the navy-yard for from one hundred and ten to one hundred and fifteen thousand dollars, and on the outside I might have built it for one hundred thousand dollars.

85 Q. 58. (By the MASTER.) By "on the outside" what do you mean?

A. I mean outside the navy-yard, the cost in the navy-yard being always a little higher than on the outside.

Q. 59. (By Mr. BOONE.) Were any other plans of a caisson gate made or presented, other than that of Calvin Brown's, prior to the time you exhibited and gave Mr. Walcott a copy of the plans of your invention?

A. Not that I know of.

Q. 60. How long was that dry dock under construction?

A. The dry dock is not finished yet.

Q. 61. Do you know when it was commenced?

A. It was commenced in 1870.

Q. 62. Do you know what plans of a gate were designed to be used in the construction of that dry dock originally?

A. I do.

Q. 63. What were the plans?

A. The plans made by Calvin Brown, and which I have already referred to.

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A. I do.

Q. 63. What were the plans?

A. The plans made by Calvin Brown, and which I have already referred to.

Q. 64. Then, between the years 1872 and 1883, you know of no other plan having been made ——

The MASTER (interrupting). He has already stated that, Mr. Boone. He said he didn't know of any other excepting the Calvin Brown plan.

Q. 65. (By Mr. BOONE.) Now state, Mr. Schild, whether or not you are familiar with the various kinds of caisson gates for dry docks in use prior to 1883—prior to the date of your invention?

A. I know of only one kind, and that is of the style of that shown in the plans of Calvin Brown, which I have already referred to.

86 Q. 66. Please take these photographs in evidence, Mr. Schild, and see if you can find there an illustration of the gate that you refer to as having been in use prior to the date of your invention?

A. The photograph marked "Respondent's exhibit 3" show the plan of the caisson used at the Baltimore dry dock. I can not see exactly by the photograph how that Baltimore caisson is constructed, but I see sufficient to show that it is similar to the old style, namely, the one with deep hull and shallow keel; one like I have referred to as shown by Brown's plans. That Baltimore caisson might have been improved, being a caisson only constructed lately.

Q. 67. Do you know what it cost to construct the caisson gate which is now in use at Mare Island, and which was built after the plans which you have detailed, mentioned?

A. Yes, sir.

Q. 68. How much was it?

A. The contract price was some fifty-eight thousand dollars.

Q. 69. Now, state, Mr. Schild, what advantage a caisson gate built after the plans of your invention has over a caisson gate constructed according to the plans drawn by Mr. Calvin Brown in 1872, if any?

The MASTER. What bearing has that upon the question of damages, Mr. Boone?

Mr. BOONE. It may bring out quite an element of damages.

The MASTER. Well, go ahead, if there is no objection to it.

87 A. In the first place, the cost of my style of caisson is only about one-half of the cost of the caissons of the old style. In the second place, by the use of balancing tanks at each end of the caisson the jumping of the caisson is prevented. In the caissons of the old style they were very dangerous in that respect, as the caisson would sometimes get jammed in the grove and jump suddenly up and do great damage to the dock and to the caisson itself.

Q. 70. Any other advantages?

A. Yes. Through the adoption of these many wicket gates, and having a deep keel, I can fill a dock very rapidly.

Q. 71. How about the comparative weight of the two classes of machines?

A. The weight of a caisson of my style is about one-third of the weight of a caisson of the old style, including ballast.

Q. 72. How about the advantage in handling the machines?

A. A structure weighing only one hundred and twenty tons can be easier handled than a caisson that weighs some four or five hundred tons.

Q. 73. Well, that is a general statement. Now, which do you refer to when you speak of one hundred and twenty tons, and which do you refer to as weighing four or five hundred tons?

A. The caisson of my style weighs one hundred and twenty tons, and the caisson of the old style would weigh from four hundred to five hundred tons. I am speaking now only of the caisson used at the navy-yard at Mare Island. Caissons in different docks that are shallower and
88 haven't such a wide entrance, the weight of the caisson would be less.

Q. 74. Now, state whether or not there is any saving in the cost of labor or material in handling and operating the two classes of caisson gates?

A. There might be a little.

Q. 75. How about the cost of keeping them in repair, painted, and so forth?

A. The caisson of my invention will cost a good deal less, as it has no pumps, no boilers, and has less surface to protect against corrosion.

Q. 76. Can you estimate and state the difference in cost in keeping them in repair per annum?

A. It is very hard to say.

Q. 77. Well, can you estimate it?

Mr. WHEATON. I object to that. The question is whether he knows it, or whether he has got any data to make an estimate on.

The MASTER. Can you determine it, Mr. Schild?

Q. 78. (By Mr. WHEATON.) Have you got any data upon which you can base your estimate which is reliable?

A. I have got no data to rely on, but as in my caisson there are no pumps, and no boilers, and no engines, certainly the cost of taking care of boilers and engines and pumps will not have to be considered.

(Q. 76 repeated.)

The MASTER. Can you determine that?

A. Yes; I can.

89 Q. 79. (By Mr. BOONE.) Will you prepare and present in this accounting an estimate of the comparative expenses in the use of the two classes of caisson gates, namely, the one in use before the date of your invention, such as was shown by the plans drawn by Calvin Brown in 1872, and the one built according to your invention?

A. I will.

Cross-examination of George F. Schild.

X Q. 1. (By Mr. WHEATON.) Mr. Schild, are there any boilers shown in the caissons in the photographs which are in evidence—say of the Baltimore caisson, a photograph of which is in evidence?

A. I can not see any boilers.

X Q. 2. How do you understand that those caissons were lowered into the water?

A. I stated before that this Baltimore caisson is built only lately. I don't know what internal arrangements it has.

X Q. 3. Did you ever see one of those Baltimore caissons?

A. No, sir.

X Q. 4. How do you know they are of the same plan as that made by Calvin Brown in 1872 or 1873?

A. I refer only to the outside looks. It has no deep keel.

X Q. 5. Do you know whether those Baltimore caissons were made of wood or iron?

90 A. They are built of iron, because you can see here in the photograph the seams of the plates.

X Q. 6. How much more of the iron surface is exposed to the water in the Baltimore caissons than there is in the Mare Island caisson?

A. In the first place I don't know the depths and widths of this caisson. I don't know.

X Q. 7. Are there any engines in those Baltimore caissons?

A. I don't know.

X Q. 8. Were there to be any boilers or engines in the caisson which Calvin Brown proposed to build?

A. There were boilers, engines, and pumps.

X Q. 9. And those were included in the estimates which you have made?

A. Yes, sir.

X Q. 10. Now, at the Mare Island navy-yard they are obliged to use a steam engine and steam power for emptying the caisson, are they not?

A. They are.

X Q. 11. The boiler which supplies the steam for pumping out the caisson at Mare Island is on shore, isn't it?

A. Yes, sir.

X Q. 12. And so far as you can see from the photograph the engine and boiler which supplies the steam for pumping out the Baltimore caisson would be on shore also, wouldn't it?

A. I don't know.

X Q. 13. Well, you know something of your business, don't you?

A. Yes, sir; I know something of my business, but I don't know about the internal arrangements of the Baltimore caisson.

X Q. 14. Do you see anything in the photograph that would
91 indicate that the Baltimore caisson had any steam boilers on board?

A. I can't see any.

X Q. 15. What would be your judgment as to whether the Baltimore caisson had any steam boilers on board, from the photograph?

A. I can't tell.

X Q. 16. I ask you for your opinion. You can tell what your judgment would be, can't you?

A. I can't judge from the photograph.

X Q. 17. Would it be practicable to use a boiler for generating steam on those caissons without a photograph of the caissons showing a smokestack somewhere?

A. It is not necessary. The smokestack can be very low so that you couldn't see it.

X Q. 18. What labor is required in using caissons as that one is used at Mare Island?

A. Well, I never have been present when the caisson at the navy-yard at Mare Island has been used. They might employ five men and they might employ ten men; I don't know.

X Q. 19. The question is, what labor is required in using that caisson?

A. A man has to attend to the pump, and a man has to be at the coping of the dock to unloosen it and swing it around after the dock is filled with water, and also some men attending to the gates when the caisson is used when the dock is empty and the dock has to be filled with water.

X Q. 20. You are aware that they have entirely removed the gates from the caisson at Mare Island, are you not?

92 A. I don't know anything about it. The letters or letter I saw written by Mr. Walcott to the commandant of the navy-yard——

X Q. 21. You needn't mind about that. Supposing as a matter of fact they have removed those gates so they don't use them at all, that would save that much labor in working the caisson, wouldn't it?

A. Yes, sir.

X Q. 22. Then the gates being in there would be an element which would require more labor in using the caisson than would be required if the gates were not there at all, wouldn't it?

A. they require some labor, but time is saved, and valuable time is saved, and for that reason these many gates were adopted to fill it up as soon as possible. Without the gates, I believe, it takes about one hour to fill the dock, while with the gates it would take only half an hour.

X Q. 23. Do you know whether they require to cleanse and paint one side of that caisson, including the whole of the deep keel, every time it is used; I refer to the caisson at Mare Island.

A. It is not necessary, no.

X Q. 24. Do you know whether it is necessary or not?

A. I don't know.

X Q. 25. Isn't it salt water up there?

A. It is.

X Q. 26. Doesn't salt water corrode iron very fast unless it is protected by paint?

A. It does. But if you use the dock every week and handle the caisson every week, certainly it would not be necessary to paint the sides. After a caisson is in place for four or five months and not used, then it would certainly be necessary to clean that side exposed to the river,

93 and paint it all, in case the paint had been scraped off or eaten off by the contact with the salt water.

X Q. 27. Now, do you know how that is, or are you merely expressing an off hand opinion?

A. I am expressing an opinion as a naval architect. I know it is not necessary to paint a vessel every week. It is necessary to paint a vessel every five or six months.

X Q. 28. Do you know how often they use that caisson at Mare Island?

A. That depends entirely upon the number of vessels they have to dock.

X Q. 29. Well, do you know how many vessels they have docked?

A. Not exactly.

X Q. 30. How often did they dock a vessel to your knowledge, while you were in Vallejo, so that you knew what they were doing?

A. I haven't been living in Vallejo since 1886, and the caisson was in use at that time only for a short time; but to my knowledge some ten or twelve vessels had been docked.

X Q. 31. That was an average of one vessel in every three months, was it?

A. I say it depends entirely upon the arrival of men of war vessels.

X Q. 32. I am speaking of the time you were there. You were there up to 1886, and the caisson was delivered there in July, 1884, and you say there were about twelve vessels docked in that time.

A. No; I say that to my knowledge, during all this time up to date, that number of vessels have been docked there.

94 X Q. 33. That would be an average then of between two and three vessels per year, wouldn't it?

A. It would; yes, sir.

X Q. 34. Now, in the use of those caissons, what materials are used?

A. Either wood or iron. In building the caissons, do you mean?

X Q. 35. Is there any kind of material which is used up or expended in using those caissons?

A. Well, in the caissons of the old style there would be used some coal and water for working the boilers and engines.

X Q. 36. There has been a caisson out here at Hunter's Point for a great many years before your invention was made that there was no patent on. Was there any boiler used on that caisson, or some steam power used?

A. Yes, sir; there was pumps on board.

X Q. 37. Was the steam generated on board of the caisson at Hunter's Point?

A. I believe so. I don't know exactly, but I believe it was generated on board.

X Q. 38. Have you ever in your life seen a caisson used where there was a boiler on board for generating steam?

A. I have.

X Q. 39. Where was it?

A. In Bremerhaven.

X Q. 40. Have you ever seen a caisson in the United States in which there was a boiler on board for generating steam?

A. I don't know exactly, but I seen the caissons in use at the docks in New York and Boston, and I must be greatly mistaken if they

95 haven't got the boilers on board. I have seen it used, and I have neer seen steam carried by pipes to the caissons, and I know they have pumps on board.

X Q. 41. Did you see any boilers on board?

A. I say, I don't can swear to it

X Q. 42. I say did you see any boilers on board of those caissons?

A. I didn't see any; no, sir.

X Q. 43. There are no balancing tanks now on that caisson at Mare Island, are there?

A. I don't know.

X Q. 44. If those balancing tanks were used would it not require some expenditure of labor in filling them and also in opening the gates to empty them?

A. Very little labor, because only a hose had to be led to the tanks and the water would run in itself.

X Q. 45. As a matter of fact it requires very little labor to use those caissons anyway, doesn't it?

A. It does.

X Q. 46. All that is done is to either fill or empty them by steam power of their water ballast and then float them into place and float them away again?

A. Yes, sir; that is all the labor.

X Q. 47. Is it not a fact that all the labor expended in merely using those caissons is so small that you can scarcely estimate it?

A. The labor to work a caisson of the old style can be estimated, and also of a caisson of my style.

X Q. 48. In those Baltimore caissons, suppose that there is no steam on board, but that the steam power for pumping is applied from the outside, would there be any considerable amount of labor expended in using them?

96 A. I couldn't tell you.

X Q. 49. Isn't all the labor that would be required in the use of them merely the opening of the gate to let the water ballast flow in naturally, and then applying the steam power to pump the water ballast out, and then floating them into place and again out of place?

A. Apparently that would be the only expenses.

X Q. 50. The labor in that case would be precisely the same as the labor in using one of your style of caissons, wouldn't it, except that yours being a little lighter, as you say, or very much lighter, would pull around while being floated a little easier?

A. Apparently.

The MASTER. Mr. Wheaton, what is the date of the construction of the Baltimore caisson, if you know?

Mr. WHEATON. It is admitted to be ahead of the invention of complainant.

X Q. 51. When did you ever see or know of a caisson to do any jumping, as you spoke of, for the want of balancing tanks, or at all?

A. It happened a good many times that I know of personally, although I didn't see the damages it made. I know the caisson at the Boston dock jumped, and they had a great deal of trouble and labor to use the caisson.

X Q. 52. Did you see that jump?

A. I didn't see it jump, but I know it did.

X Q. 53. How do you know it?

A. From a man who had been there and saw it jump.

97 Mr. WHEATON. I move to strike that all out, for the reason that it is only hearsay testimony, and not in response to the question I asked.

The MASTER. So far as his statement goes as to information that he has derived from other people, it is incompetent, and therefore it is stricken out.

X Q. 54. Now, I have asked you if you ever saw a caisson jump while being raised, as you have described?

A. I haven't seen it.

X Q. 55. Is it not a fact that the balancing tanks in that caisson at Mare Islan' were never used in practice, even while the tanks remained in the caisson?

A. I don't know anything about it.

X Q. 56. Is it not a fact that that caisson is used there now without any balancing tanks at all, and that it has never done any of the jumping that you have spoken about?

A. I don't know anything about it.

X Q. 57. Who built that caisson that is at Mare Island?

A. The Union Iron Works of San Francisco.

X Q. 58. You brought suit and recovered against them for building that caisson for infringing your patent, didn't you?

A. I won the suit, but I waived damages.

X Q. 59. You got judgment for nominal damages, didn't you?

A. I don't understand it that way. I waived damages and didn't want any damages against the Union Iron Works.

X Q. 60. The Union Iron Works were the only parties that built that caisson, were they not?

A. They were.

98 X Q. 61. And you waived damage against them for the building of the caisson, did'nt you?

A. I did.

X Q. 62. The defendants in this case, as far as you know, have never built any caisson, have they?

A. They have built this caisson. The Union Iron Works built it, but the Government superintended it, and the Government furnished the plans and the superintending it.

X Q. 63. You have never sued the Government, have you?

A. I didn't sue the Government. I sued the officers in charge of the navy-yard and Mare Island

X Q. 64. Now, all those officers have done has been to use it, as officers of the Government, so far as you know?

A. Yes, sir.

X Q. 65. Now, as a matter of fact, don't you know that that is all that these defendants have had to do with that caisson; that is, to use it as officers of the Government there at Mare Island?

A. Yes, sir.

X Q. 66. Where were the plans upon which the caisson should be built for the Mare Island navy-yard in 1884 finally determined upon?

A. In Washington, at the bureau of yards and docks.

X Q. 67. None of the defendants in this case helped to determine what plans should be used in the building of that caisson, did they, so far as you know?

A. As far as I know, Mr. Wolcott, civil engineer, had to say something about it.

X. Q. 68. Was Mr. Walcott in Washington at the time the plans were determined upon?

99 A. No, sir; but my plans were forwarded from Washington to Mr. Walcott to approve of the plans, and so certainly he had to say something about it, in my opinion.

X Q. 69. Were not the plans determined upon and approved by the officers of the Navy Department in Washington?

A. Yes, sir.

X Q. 70. They were not sent to Mr. Wolcott for him to approve of afterwards, were they?

A. Not afterwards, but they were finally approved.

X Q. 71. They called upon Mr. Walcott for advice and information, didn't they?

A. They did.

X Q. 72. And that was all, wasn't it, so far as you know?

A. So far as I know, yes.

X Q. 73. And he forwarded your plans and specifications to Washington at your request, didn't he?

A. No, sir; not at my request. The first set, yes. Not at my request at all, at his request.

X Q. 74. Didn't you make an offer to the Union Iron Works, and to the Government, that if they would use your entire plan that you would give them the use of the entire invention?

A. I did at one time.

X Q. 75. Were not you at that time anxious at that time to have them use it, so as to introduce your invention into use?

A. Yes, sir.

X Q. 76. You had no means yourself of building a caisson to test your invention, to know whether it would be better than the old plans from actual trial, had you?

A. No; not by actual trial.

100 X Q. 77. Now, did your plans call for the sinking of the caisson by pumping water ballast into it, or did they not?

A. Not by pumping, but by letting the water in.

X Q. 78. Well, by letting the water in from some outside source?

A. Yes, sir.

X Q. 79. Either by pumping or by letting it flow from a hydrant, which will make the water flow high enough to flow into those tanks?

A. Yes, sir.

X Q. 80. The plan which the defendants use is to let the water into the lower part of the hull of caisson by opening a gate and allowing the water to flow in from the body of water in which the caisson floats?

A. Both. They had balancing tanks to be filled by a hydrant, and had also some means to let water into the hull.

X Q. 81. Well, so far as you know of the defendants using it, didn't they always use it by letting the water ballast flow into the hull from the body of water in which the caisson floated?

A. They must have done so.

Mr. BOONE. I object to this testimony as being immaterial and irrelevant, as going over the same ground as was gone over in the main case, and as having nothing to do with the question of damages.

The MASTER. It is the very question you insisted upon going into yourself, as to what the advantages of this caisson are over something else. That is the very gist of the whole thing.

Mr. BOONE. I am perfectly willing to admit anything with reference to the advantages.

101 X Q. 82. Then the caisson at Mare Island has to be raised by pumping water ballast out of it, doesn't it; while, according to your plan, the water would flow out by gravitation?

A. Yes, sir.

X Q. 83. Then that part of your plan which proposes to let the water ballast flow into and sink the caisson from some other water supply from a higher elevation than that in which the caisson floated, and then raising the caisson again by allowing the water ballast to flow out by gravitation, has never been used by the defendants, has it?

A. The first part has. The caisson at the navy-yard at Mare Island had these balancing tanks and let the water in from the outside.

X Q. 84 Are you sure of that?

A. I say it has the tanks. It had the tanks.

X Q. 85. Have the defendants ever let water into those tanks from some other source or pump water into them?

A. They did.

X Q. 86. Have the defendants ever put water into either of those balancing tanks, to your knowledge?

A. As I stated, I never was present when it was operated, but I know it had those balancing tanks, and those balancing tanks were there for some purpose.

X Q. 87. That is, you know they were there and could have been used?

A. Yes, sir.

X Q. 87. Now, I ask you if you know of your own knowledge that these defendants ever put any water into those balancing tanks?

A. Not to my knowledge.

102 X Q. 89. Then why did you testify that they used that part of your plan?

A. I testified so because that is a part of my patent, and they have got it in there, and they used it. When they put the tanks in they used a part of my patent, whether they put water in or not I don't care.

X Q. 90. These defendants didn't put the tanks in there, did they?

A. They had it built.

X Q. 91. Did these defendants have that caisson built?

A. I said before that the Government superintended the making of this caisson.

X Q. 92. Well, these defendants didn't superintend the making of this caisson, did they?

A. Yes, sir; one of the defendants, Mr. Walcott, here superintended the building of the caisson.

X Q. 93. Did Mr. Walcott ever act as superintendent at the Union Iron Works for a single day, to your knowledge?

A. Not for the Union Iron Works, but for the Government.

X Q. 94. Was he at the Union Iron Works while this caisson was being built, to your knowledge?

A. Yes, sir; to my knowledge he went down there almost every week.

X Q. 95. Did you see him there even once?

A. I didn't see him there; no.

X Q. 96. Then why do you swear to things that you didn't see?

A. Because he told me so himself. He was there by order of the Secretary of the Navy, from his Bureau.

103 X Q. 97. Did you see the order of the Secretary of the Navy?

A. I saw the order from the Department appointing him as superintendent for building this caisson.

X Q. 98. Well, if you thought he had anything to do with the building of it why didn't you make him a party to the suit, when you brought suit against the Union Iron Works for building it?

A. Well, I left that to my lawyers. I didn't know anything about the law.

Reexamination of George F. Schild:

R. Q. 1. (By Mr. BOONE). Mr. Schild, the estimate which you gave of fifty-eight thousand dollars, did that include the engines and boilers?

A. No, sir. There was a pump put in afterwards by the Union Iron Works, and they got paid extra for this pump.

R. Q. 2. Do you know what that pump cost?

A. I believe they got two thousand dollars extra for the pump?

R. Q. 3. What is the cost of a boiler and engine such as would be adapted for operating in connection with that pump?

A. Pumps and boilers and engines to work the pumps for a caisson as first constructed by Calvin Brown would cost from eighteen to twenty thousand dollars.

104 R. Q. 4. What is the object of the gates in the keel?

A. To fill the dock with water.

R. Q. 5. Now, if those gates were closed how could the dock be filled?

A. By culverts from the outside.

R. Q. 6. (By Mr. WHEATON.) Culverts through the masonry of the dock?

A. Yes, sir; through the masonry of the dock.

R. Q. 7. (By Mr. BOONE.) The culvert would do the same thing, then, would they, that the gates would do?

A. Yes, sir.

R. Q. 8. (By the MASTER.) How long have culverts of that kind for that purpose been in use, to your knowledge?

A. I believe they have been always in use.

R. Q. 10. You spoke of estimates of the boiler-maker in the navy-yard and of your own estimates of the cost of the woodwork, and pumps, and so forth, for the caisson shown in Calvin Brown's plans. When were those estimates made?

A. The last estimates I know of were made by Civil Engineer Walcott.

R. Q. 11. The estimates I speak of are those referred to in the question. When were those estimates made?

A. In 1882.

R. Q. 12. (By Mr. WHEATON.) You spoke of a caisson being constructed by Calvin Brown. You refer to the caisson that may have been constructed after his plans, do you not?

A. Yes, sir.

R. Q. 13. Calvin Brown never built any caisson, did he?

A. Not that I know of.

105 (It is agreed by both complainant and respondent that the time within which the complainant may put in his case upon the accounting is extended to and including Saturday, February 22nd, 1890.)

(The further hearing is continued, in conformity with agreement of counsel, until Friday, February 21, 1890, at half-past ten o'clock a. m.)

SATURDAY, *March 15th*, 1890.

Present: Mr. Boone and Mr. Miller, of counsel for complainant; Mr. Wheaton, of counsel for respondents.

Reexamination of George F. Schild on behalf of complainant:

Q. 1. (By Mr. BOONE.) Mr. Schild, at the last sitting in this matter you stated that you would make out and produce a statement of the rela-

tive cost of construction and of maintenance between the old style caisson gate and your improved caisson gate. I will ask you whether or not you have prepared such a statement.

A. I have, and now produce it.

(The statement above referred to and produced by the witness is introduced in evidence by complainant and marked "Complainant's Exhibit, Schild Estimate.")

Mr. WHEATON. We object to that exhibit on the ground that it is irrelevant, for the reason that Mr. Schild has already testified that none of these defendants made any caissons, and that the relative cost of building caissons is entirely irrelevant to any question of damages in this case.

The MASTER. Do I understand that that is your only objection, Mr. Wheaton?

Mr. WHEATON. That it is irrelevant generally, because it is not an element of damages.

106 The MASTER. You do not object to the form of the introduction of that document?

Mr. WHEATON. No, sir.

The MASTER. A basis of damages may be the difference between that which the defendants used in violation of complainant's rights under his patent and that which they may have been entitled to use, and for that reason this document is considered relevant, and the objection is therefore overruled.

Mr. WHEATON. I will save an exception.

Q. 2. Do you know, Mr. Schild, when the Mare Island caisson gate was put in use?

A. I don't know the correct date. I believe it was 1885.

Q. 3. On what, Mr. Schild, did you base your estimate of the cost of constructing the old style caisson gate in making up your estimate, "Exhibit Schild Estimate?"

A. When Mr. Brown, at that time civil engineer of the navy-yard at Mare Island, had made a set of plans for a caisson of the old style, he had an estimate made of weights and cost of material, and so forth, and also an estimate of the total cost, and I took that as a basis of this estimate of mine. Mr. Walcott had made an estimate and I used that also.

Q. 4. Now, on what did you base your estimate for repairs to hull for one year in the old style caisson gate?

A. The estimate was based on my experience for what it cost to maintain a plant for pumping, and also of wear and tear of a similar structure.

107 Q. 5. What means are employed at the Mare Island dock yard, Mr. Schild, for handling the water which is used in connection w th the caisson gate?

A. I don't quite understand the question.

Q. 6. What means are used; what motive power have they got—power for pumping?

A. They have got a pump on board.

Q. 7. What power is it that drives the pump?

A. Steam.

Q. 8. Where do they get the steam from?

A. From a boiler on shore.

Q. 9. Does that boiler form any part of the caisson gate?

A. Not directly. Certainly they must have steam power to work the pump.

Q. 10. Do you know whether that steam pump was in the possession of the Government at Mare Island before the caisson gate was constructed or not?

A. It was.

Q. 11. Then do you know whether or not the defendants in this case purchased any steam engine or other motive power to be used in connection with the caisson gate?

A. They purchased only the pumps.

Q. 12. How many pumps did they purchase?

A. Only one.

Q. 13. Do you know what the cost of that pump was?

A. I believe two thousand dollars.

Q. 14. Do you know whether or not that pump was purchased at the same time or subsequent to the construction of the caisson?

A. The pump was not included in the contract for building the caisson. It was an extra expense.

108 Q. 15. And was purchased afterwards?

A. Yes, sir; purchased afterwards.

Q. 16. Is that pump a necessary part of the machinery required to operate the caisson gate as there operated?

A. Not necessarily.

Q. 17. But in actual practice do they use it in the actual operation of the gate?

A. They do.

Q. 18. What repairs are included in your estimate, Mr. Schild, under the head of repairs to hull, for one year? State how you arrived at the figures given by you in the "Exhibit Schild Estimate."

A. Well, wear and tear of boilers; the grate-bars certainly burn out, and sometimes a tube gives out and has to be replaced, and so on; and also the valves of the engines have to be overhauled, and the same with the pump, pistons, and valves, and then the hull itself gets shaved sometimes; stanchions bent or broken off by handling the caisson, and the deck has to be recaulked sometimes.

Q. 19. What is the ordinary life of a steam boiler, Mr. Schild?

A. Well, if a boiler is kept in good condition it should last from twelve to fifteen years.

Q. 20. On what do you base your estimate for painting the structure during one year, as shown in "Exhibit Schild Estimate?"

A. An iron structure floating in salt water ought to be painted every eight months, but the cost of this painting differs; for instance, the first paint would be three coats, the second paint would only be two coats,

109 the third one the paint had to be scraped and cleaned off, and the fourth time the paint has to be scraped off entirely and the iron laid bare, so the usual contract price here in San Francisco is three cents a square foot, but for the last time, when they have to scrape the paint off entirely, it is six cents, because the cost is twice the original painting, but I considered it and made it by the year.

Q. 21. That is, you base your estimate upon a year's cost?

A. Yes, sir; on the actual surface at the prices current here in San Francisco.

Q. 22. On what did you base the estimate headed "Cost of handling for one dockage?"

A. I added the different expense, cost of labor, and also the cost of coal for the time while the caisson was taken out and put back again into its place.

Q. 23. Do you know what the cost of labor and coal is at Mare Island?

A. I did not include the cost of coal used for that purpose at the navy-yard at Mare Island, but made only a calculation of the time and the number of men employed for handling the caisson. Certainly it differs at different dockages, just according to how favorable and how quick the act is performed of putting in the caisson and taking it out.

Cross-examination of George F. Schild:

X Q. 1. (By Mr. WHEATON.) How do you understand that there
110 is any relation between the cost of pumping in using the caisson gate at Mare Island, as you have testified, and anything in your patent?

A. As I stated before, I did not take any account, and did not take the cost into consideration what it cost for working the pump of the caisson at the navy-yard at Mare Island, only handling the caisson by putting a vessel into the dock.

X Q. 2. How do you understand that the cost of the pump which was put in the caisson has anything to do with anything that is shown in your patent, or with the profits or damages in this case?

A. I did not take the cost of the pump into account whatever.

X Q. 3. You have testified, have you not, that the cost of the pump which was put into the caisson was two thousand dollars?

A. Yes, sir.

X Q. 4. Now, what bearing do you understand that that has upon the question of profits or damages in this case?

Mr. BOONE. That is objected to as immaterial and irrelevant. It is immaterial what bearing Mr. Schild thinks it has. It is a question of law whether it has any bearing or not.

The MASTER. I should think so; that is a question of law whether it has any bearing or not. There is a rule of damages in relation to patent cases, as I understand it, something like this: If a party, by making a patented appliance which belongs to somebody else, has saved an
111 amount of money which he would have expended necessarily if he had made anything else which he was entitled to make, it forms a basis for an assessment of damages. Now, whether or not in this case it will do so may be a question, but inasmuch as there is such a rule such evidence certainly can be properly introduced; evidence which may bear upon that question. It may be that it did not save anything, and it may be that it did, but it certainly is proper evidence, it seems to me.

As to this particular question it is immaterial what the witness' view in relation to the thing is if he has not in his estimate calculated upon the expense of the pump, and therefore the objection is sustained.

X Q. 5. What is the pump used for that you have testified about?

A. For taking the water out of the caisson.

X Q. 6. Now, if your system had been adopted by the defendants for taking water out of the caisson they would not have needed that pump, would they, for taking the water out of the caisson?

A. No, sir.

X Q. 7. So far as taking the water out of the caisson and letting the water out of the caisson is concerned, your system was not adopted by the defendants, was it?

A. It was.

X Q. 8. Please explain how?

A. Well, the court decided——

X Q. 9. (Interrupting.) No matter what the court decided. Please tell how your system for letting the water into the caisson and letting it out again was adopted by the defendants.

112 A. I don't quite understand the question.

X Q. 10. (X Q. 9 repeated.)

A. Well, there are some inlet gates what let the water in which I have got in my patent, and which they adopted.

X Q. 11. What inlet gates do you refer to in your last answer?

A. Well, some valves attached to the caisson.

X Q. 12. Did those valves admit the water for sinking the caisson?

A. Yes, sir.

X Q. 13. Did those valves admit the water into the caisson for sinking it directly from the body of water in which the caisson was floating?

A. Yes, sir.

X Q. 14 Have the defendants always sunk their caisson into place by admitting the water-ballast through those valves into the body of the caisson with water coming from the body of water in which the caisson was floating?

A. Yes, sir.

X Q. 15. Now, will you please point out anything in your patent which provides for sinking the caisson in any way; that is, by the water-ballast being admitted into the caisson from the body of water in which the caisson was floating?

Mr. BOONE. I shall object to that as immaterial. That goes to the question of infringement, and has nothing to do with the accounting.

The MASTER. The objection is overruled.

A. There are valves, marked in the patent "H," to admit the water into the caisson for sinking purposes.

113 X Q. 16. As shown in the patent, are those valves above or below the water line in which the caisson is floating?

A. In the patent they are shown, I believe, above the water line.

X Q. 17. Doesn't your patent describe, as you understand it, that those valve openings "H H" are to let the water ballast flow out of the caisson automatically?

A. Yes, sir; and also to let the water in.

X Q. 18. Now, in order to sink the caisson far enough so any water will flow into those valves "H," you are first obliged to pump water into the elevated water tanks, are you not?

A. Not to pump it in, necessarily; it may be allowed to run in.

X Q. 19. Is there any water supply at Mare Island from which the water would flow into those elevated water tanks?

A. Yes, sir; there are hydrants connected with the waterworks at Vallejo through which water could be made to flow into those tanks.

X Q. 20. Well, the water has to be put into those elevated tanks first before any water will flow in through the valves "H," doesn't it?

A. It has.

X Q. 21. That is no part of the body of water in which the caisson floats, is it?

A. Well, when the caisson floats the caisson is not in operation.

X Q. 22. This water which goes into the tanks above is no part of the body of water in which the caisson floats, is it?

A. No, sir.

114 X Q. 23. Now, the ordinary method of sinking caissons prior to your invention was through valves in the caisson placed below the water line and through which the water ballast would flow into the caisson from the body of water in which the caisson was floating, was it not?

A. It was.

X Q. 24. Then you do not claim that to be any part of your invention, do you?

A. Not of the working of the caisson of the old style.

X Q. 25. The valves in the caisson which the defendants used are below the water line in which it floats, are they not?

A. I believe they are.

X Q. 26. Are there any such valves shown in your patent?

A. The equivalent of those valves is.

X Q. 27. Are there any valves or gates shown in the caisson described in your patent placed below the water line for admitting water ballast into the caisson?

Mr. BOONE. I object to that question, and to this line of examination, as being entirely outside of any matter of accounting covered by this reference, and has nothing to do at all in any way that I can see with the question of profits, damages, or advantages. It relates simply to the construction of the machine and goes to the question of infringement, which the court has already decided.

The MASTER. It strikes me that this testimony is rather directed to the question of infringement than it is to the question of damages;

115 but at the same time, upon the question of advantages, which may be shown between this and any other system, I think the evidence may be admissible, and therefore I will overrule the objection.

A. There are.

X Q. 28. Which are they?

A. Those gates are marked "H" in the patent.

X Q. 29. Did you not just testify that they were not placed below the water line?

A. You don't understand that water line. These gates are under water at high tide, and certainly I can let water through these gates "H" into the body of the caisson.

X Q. 30. What did you understand to be the water line a few minutes ago when you testified that the gates "H" were not below the water line but were above it?

A. If a caisson floats empty then those gates "H" are above the floating line, but when the caisson is in use as a gate these gates "H" are always under water at high tides and admit water by opening the gates.

X Q. 31. Does that line marked "W," in Fig. 5 of the drawings of the patent, represent the water line of the caisson describ' in your patent, or not?

A. It represents the floating line of the caisson when empty.

X Q. 32. What is the difference between the floating line of a floating vessel and what is ordinarily called the water line of a floating vessel?

116 A. The floating line of a vessel is generally the line at which the vessel floats when she is loaded down by cargo, and so on, and the light draft line is the line at which a vessel floats when she is empty.

X Q. 33. (X Q. 32 repeated.)

A. Well, there is no difference.

X Q. 34. Does the line marked "W," in Fig. 5 of the drawing of your patent, represent what is ordinarily known as and called the water line?

A. That is the light floating line.

X Q. 35. Is that the water line of the ship or not?

A. It is really not the water line. I state here in the patent that these gates "H" are below the floating line when these balancing tanks are filled with water.

X Q. 36. Please point out where the light floating line is when the balancing tanks are filled with water?

A. Then I don't call it "light floating line."

X Q. 37. You stated in your last answer, did you not, that the gates "H" were below the light floating line when the balancing tanks were filled with water?

A. Yes, sir.

X Q. 38. Now, I ask you to point out where that light floating line is in your patent when the balancing tanks are filled with water?

A. The light floating line is the water line when the tanks are empty.

X Q. 39. Is there any such thing as a light floating line for your caisson when the balancing tanks are filled with water?

A. No, sir.

117 X Q. 40. Now, in building the caisson described in your patent was the cost of building that caisson more or less on account of putting in the double wicket gates "G?"

A. The cost was increased by putting in those gates.

X Q. 41. Was the cost also increased by putting in the devices described in your patent for operating those gates?

A. It was.

X Q. 42. Was the cost of the caisson increased or diminished by putting the air chamber underneath the deck "E?"

A. It was not increased.

X Q. 43. How was it possible to put that air chamber underneath deck "E" without its costing something?

A. What I call "air-space" in my patent is nothing but the hold, and is formed by a water-tight deck.

X Q. 44. How many decks does your vessel have, counting the water-deck "E", as it is called in the patent, as the lower deck, as described in the patent?

A. Three.

X Q. 45. How many decks does the defendants' caisson have, counting the bottom of their hold as the forst deck?

A. Two.

X Q. 46. Then your caisson has one more deck than the defendants', hasn't it, not counting the air chamber?

A. It has not. I state in that patent, and certainly in the patent drawings I show three decks; but I state also in the patent that I can do with less decks.

X Q. 47. Well, how many decks can you do with and make a caisson as described in the patent?

A. With two decks.

X Q. 48. Then your caisson must have as many decks as the defendants' had?

A. It must.

X Q. 48. Now, underneath your lower water deck "E" you
118 have an air-chamber "e," have you not, as described in the patent? Now, do you mean seriously to swear that the building of that air chamber underneath the lower water deck would not cost any money?

A. I don't think it would.

X Q. 49. Why would any part of the caisson cost anything, if the building of that air chamber didn't cost anything?

A. Well, I stated before that this air chamber—what I call the "air chamber"—is nothing but the hold of the vessel, having a water-tight deck, and as generally decks are made water tight, it don't cost any more money.

X Q. 50. Don't the holds of vessels cost money to build them?

A. You can't build a vessel without a hold. The hold forms the vessel, you might say.

X Q. 51. Doesn't that hold cost money to build it in any vessel; that is, in any ordinary vessel?

A. It costs money to build a vessel; but not specially to build the hold.

X Q. 52. In order to build that air chamber "e" you had to build an inclined bottom and two sides, did you not, nearly or quite the whole length of the caisson?

A. I did.

X Q. 53. And you still say that that could be built and not cost any money?

A. As I stated before, it didn't cost any more money. It forms a part of the structure.

X Q. 54. The question is not whether it cost any more money, but whether it cost any money.

A. Well, it costs any money.

X Q. 55. It costs some money; is that the idea?

119 A. Well, really I can't answer that question. You might just as well ask me if a caisson costs any money. Certainly it costs any money; but certainly it dosen't cost any more money to put in this air chamber or hold.

X Q 56. Now, give me a direct answer, so we can quit that subject. Would it cost money to build the air chamber "e" underneath your lower water deck "E," as described in the patent, or not?

A. I think not.

X Q. 57. Would it cost any money to put the elevated water tanks "F" in the caisson described in the patent, or not?

A. It would.

X Q. 58. Would it cost some money, also, to to make the outlet "f" and the apparatus for closing and opening it; that is, the outlet "f" from the water tanks "F?"

A. It would cost some money.

X Q. 59. Can you tell how the cost of the valves "H" described in the patent, if made, would compare with the cost of the inlet valves which the defendants used?

A. It might cost some more money.

X Q. 60. Which might?

A. The valves called for in my patent might cost more money that the other.

(Examination continued, in conformity with agreement of counsel for the respective parties herein, until Monday, March 24th, 1890, at half past ten o'clock a. m.)

120 *Deposition of Calvin Brown.*

MONDAY, *March 24th*, 1890.

Present: Mr. Boone and Mr. Miller, of counsel for complainant; Mr. Wheaton, of counsel for respondents.

Examination-in-chief of Calvin Brown, on behalf of complainant.

Q. (By Mr. BOONE). State your name, age, place of residence, and occupation.

A. My name is Calvin Brown, my age seventy-four years, my place of residence San Francisco, and I am by occupation a civil engineer.

Q. 2. Do you know George F. Schild, the complainant herein?

A. Yes, sir.

Q. 3. How long have you known him?

A. I think I have known him fifteen or sixteen years; somewhere about that time. I don't know exactly when I first made his acquaintance.

Q. 4. What was he doing when you first knew him?

A. He was draughtsman in the construction department of the United States navy-yard at Mare Island.

Q. 5. What were you engaged in at that time? What was your business?

A. Until I was retired from the service I was the civil engineer of that yard. I had charge of the department of docks and yards.

Q. 6. The dry dock of Mare Island was completed under your

121 supervision, was it?

A. It was commenced under my supervision.

Q. 7. How long were you in charge of the construction of that dry dock; up to what date?

A. I think about nine years.

Q. 8. About when did you leave or withdraw from that position?

A. I think it was in 1881.

Q. 9. What was the condition of the dry dock at that time, Mr. Brown?

A. Well, a portion of the floor, the concrete, was put in, some of the granite work of the floor was put in, and of the altars, and the excavation was, I think, very nearly completed.

Q. 10. In what condition were the plans and specifications of that dry dock at that time, in 1881, when you withdrew from there?

A. Working drawings of details were made from time to time during the construction, but the general plan and estimate had been sent on to Washington at the time the dock was authorized to be built.

Q. 11. What style of gate for closing the mouth of the dry dock was in contemplation when the dock was first plan'ed and the specification drawn?

A. Well, the old fashioned caisson, which might be called a ship caisson. It was shaped something like a ship. That was the style of caisson which was contemplated at that time; but after I had seen Mr. Schild's caisson I thought that was the better plan.

122 Q. 12. Who prepared the specifications and plans of the old style, or the first caisson contemplated by you and by the Government, in the construction of that dry dock?

A. As far as those plans were completed they were made in my office, by my draughtsman, under *jy* supervision.

Q. 13. Did you make any estimate of the cost of constructing the caisson gate according to that old plan of that old-style caisson gate?

A. I submitted that as an item of my general estimate for the building of the dry dock.

Q. 14. What was the estimate which you placed upon the construction of that old-style caisson gate?

Mr. WHEATON. I object to that question as irrelevant.

Mr. MASTER. The objection is overruled.

Mr. WHEATON. We will take an exception.

A. Well, I can not remember exactly what the amount was. I think it was somewhere in the vicinity of one hundred thousand or one hundred and twenty thousand dollars, but I have no exact recollection of it.

Q. 15. Who prepared and made that estimate?

A. All the estimates were prepared by my myself.

Q. 16. Do you know what data you had to go by in making or preparing that estimate?

A. As near as I can recollect I was *g*iverned to a considerable extent by the cost of the caisson for the Brooklyn dry dock, which was a caisson of the same character.

Q. 17. What style of gate was that used at the Brooklyn dry dock?

A. That was the caisson style, the old-style ship caisson, as near as I recollect now.

123 Q. 18. What means or data had you to go by as far as that Brooklyn caisson gate was concerned in making up your estimate for the construction of a gate at Mare Island?

A. I got my information from Stewart's work on the dry docks of the United States.

Q. 19. You say you can' recollect whether it was one hundred thousand or one hundred and twenty thousand dollars?

A. I can't recollect the exact amount.

Q. 20. Do you know what is meant by the "side culverts," Mr. Brown?

A. Yes, sir.

Q. 21. What would be the cost of those side culverts?

A. Do you mean the side culverts themselves or the side culvert gates?

Q. 22. Or the side culvert gates. Just state, Mr. Brown, what your estimate of the cost of those culvert gates was?

A. Well, I should think the mere gates and the setting might cost thirty-five hundred dollars apiece. That would be my judgment.

Q. 23. How many were there?

A. Two. I wish to make one remark in regard to that estimate, that it is based upon the Brooklyn dock. I probably modified the cost as, I think now, was reported in Stewart's book by the consideration of the difference of wages and costs of material here.

Q. 24. If in your estimate as to the cost of that caisson was included six culvert gates, what would be your estimate as to the cost of those?

124 —A. Well, in order to give a decided opinion on that question, I should like to be refreshed in regard to the size of those gates. I do not know now that I included in my estimate anything more than the gates which pertained to the filling of the dock, without any reference to the culvert gates. I do not remember whether I included the draining culverts or not. I think my report, if it is in existence, will explain that whole thing. If you will allow me to state what my impression at this moment is of what probably was in my mind at the time I made this estimate, I would say this, that I probably lumped the caisson with its machinery at an even one hundred thousand dollars, and then put in the gates at twelve thousand dollars. That seems to me the only rational conclusion that I can arrive at now.

Q. 25. Do you know whether in estimating the cost of pumps you included anything for draining gates in that estimate?

A. I don't recollect. I can not state now.

Q. 26. How long after you submitted your estimate and plans to the Government was it that you first saw Mr. Schild's newly invented caisson gate?

Mr. WHEATON. That is objected to as calling upon the witness to testify as to a "newly invented" gate. There is no evidence so far to show that the gate that Mr. Schild submitted to him is the same gate covered by the claims of his patent.

The MASTER. Inasmuch as that it is assuming a fact that is not proved in the examination of this witness, the objection is sustained.

125 Q. 27. How long after you submitted your plans and estimates to the Government, Mr. Brown, was it that Mr. Schild exhibited to you his plan of a caisson gate?

A. It must have been ten years or more, I think.

Q. 28. About what year was it, to the best of your recollection, that you first saw Mr. Schild's plans?

A. I think it was in 1880. It might have been in 1879; I don't know. I think it was about 1880.

Q. 29. In what condition were his plans at that time?

A. I believe they were quite complete; and sometime after that he showed me a model. I don't know exactly when I saw his model, but I

recollect perfectly well that I did see it, because I have a memorandum of the occurrence. I was in Washington in February, 1882, when I gave Admiral Nichols a description of Mr. Schild's caisson as I had seen it, and his model must have been made sometime before that.

Q. 30. Did you make any careful examination or investigation into the comparative value and cost of construction between the old-style caisson gate that you had formerly estimated upon and Mr. Schild's caisson gate?

A. I formed an opinion as to its greater economy, but I made no special investigation or examination upon it. In my judgment, I considered the one proposed by Schild a very much cheaper caisson than the one I had before estimated upon.

Q. 31. How much cheaper did you estimate it to be?

A. In dispensing with the pump engines, which I believe I had included in my caisson, and the extra iron work, I should judge it would not cost much more than one-half. That is a mere judgment of mine; I

126 made no special calculations.

Q. 32. How about its efficiency?

A. I considered it more easily handled than the old caisson and equally efficient.

Q. 33. Did you make any recommendation to Admiral Nichols or to the Government in regard to Mr. Schild's caisson gate?

A. No official recommendation. It was in private conversation. I was retired then, and I told Admiral Nichols that I thought Mr. Schild's was a very excellent device for a caisson.

Q. 34. What did you say to Admiral Nichols about the comparative expense of the two.

A. I think, as near I can recollect that fact, its cheapness, its economy, was one of its recommendations.

Q. 35. I will ask you, Mr. Brown, whether you ever saw these plans before which I now show you, or not, and if so, when?

A. If I have never seen these plans, I have seen similar ones that Mr. Schild has shown me.

Q. 36. When did he show them to you?

A. Well, I saw them years ago; and I think it was this same one that he showed me the other day.

Q. 37. What do those plans represent?

A. This represents the Schild caisson.

Q. 38. Represents the Schild caisson which was shown to you at that time, in 1882, does it?

A. As near as I can judge, without a very minute examination.

127 Q. 39. Here is another one; have you ever seen that?

A. I would make the same answer in regard to that one.

Q. 40. (By Mr. WHEATON.) Do you know whether or not you saw these drawings in 1880?

A. I saw plans similar to these. I say 1880—it was somewhere about that time. It might have been later than that. It might have been 1881. These drawings convey the same idea that I have always had of Mr. Schild's caisson, as agreeing with his model and agreeing with the drawings that I saw in the navy-yard when I was there.

(The two drawings last above referred to are introduced in evidence by complainant, and marked, respectively, "Schild plan, No. 1," and "Schild plan, No. 2.")

Cross-examination of Calvin Brown:

X Q. 1. (By Mr. WHEATON.) Mr. Brown, please look carefully at the drawings just put in evidence, and state whether you are certain that you saw drawings like those made by Mr. Schild before you left the navy-yard, or not?

A. I think I saw drawings similar to those before I left the navy-yard. I think I was in Mr. Schild's office from time to time and I saw what he was at work at, and it is my impression that I saw drawings there. I am sure that I saw a model, and I think I must have seen the drawings.

X Q. 2. How early did you see the model which Mr. Schild made of his caisson?

128 A. That, I think, was in perhaps the last of 1881, as near as I can now recollect.

X Q. 3. How did Mr. Schild explain to you that he would sink his caisson into place as he described it to you while you were at the navy-yard?

A. He had water tanks in the end that he filled partially with water just so as to sink it down to a certain depth, and then, as near as I can recollect now, by opening valves he filled in more water until a sufficient quantity was in to sink the whole caisson down to its place.

X Q. 4. At that time how could he get water into the upper tank?

A. I think he pumped in a little water, or he may have calculated to have thrown in some water from the heads supplied by the Vallejo water-works; I am not certain about that, but that is my impression.

X Q. 5. How did you understand that his construction of the caisson would save the pumping engine?

A. Well, by using a small hand pump. A pumping caisson implies this: That considerable machinery, engine, boiler, and so forth, is constructed on the caisson itself, and water is pumped into the caisson until it sinks, whereas in Mr. Schild's caisson he had his valves placed very near the water surface so that by pumping in comparatively little water by hand, or from any head that might have been supplied, he could sink that caisson down deep enough to open those valves and let water flow into the rest of the caisson.

129 X Q. 6. In the caisson at the United States navy-yard at Brooklyn that you have mentioned, was the caisson sunk by pumping water into it?

A. I think it was; yes. It is a long time since I have seen that caisson work; a good many years.

X Q. 7. Did you ever see the caisson that was at work earlier than that out here, at Hunter's Point, in San Francisco?

A. No, sir; I never saw it at work. I saw the caisson there, but I never saw it at work.

X Q. 8. What advantage is there in sinking the caisson by pumping water into it, as they did at the Brooklyn navy-yard, over and above the ordinary method of sinking it by opening valves just below the water line and letting the water flow into it?

A. I suppose a caisson might be constructed without any engines or pumps, as they are now, if I recollect right, as they are now used at the Norfolk navy-yard and at the Boston navy-yard. There they are sunk in that way, simply by opening valves and letting the water in. I don't know what particular advantage there was at the Brooklyn navy-yard by their system of pumps, but it was considered that there was an advantage, inasmuch as that caisson was built a long time afterwards—after the other two that I spoke of, and the pumps were used. Now, it occurs to me that the pumps were used for taking water out of the caisson more quickly, or for some such purpose as that. That is what I think they were used for at the Brooklyn navy-yard. I think furthermore now, in the case of those two old caissons, they had hand pumps for pump-
130 ing out the water in order to take the caisson out of its grooves.

X Q. 9. Do you know how much you allowed for the cost of the pumping engines in the estimate which you made of one hundred and twelve thousand dollars?

A. I do not; no.

X Q. 10. Did that include boilers as well as engines?

A. Yes, sir; I think it did. They must have had steam from some source, and that of course would be the most convenient source, a boiler in connection with an engine.

X Q. 11. Did they at that time have any connection with the dock, the pumping apparatus at Mare Island, for pumping water out of the dock?

A. No, sir; not when I was there. We had not arrived at that point.

X Q. 12. If you had had a boiler there, and a pump for pumping water out of the dock, then you would have had a supply of steam without having to furnish a boiler for the caisson, couldn't you?

A. Steam could have been carried from any distance to the pumping engine of the caisson. There was absolutely no necessity for a boiler there if steam could be supplied from any other source.

X Q. 13. At that time, as I understand you, they had no other means of supplying steam for pumping out the caisson except by furnishing a boiler, at the time you made your estimate?

A. Oh, we had steam engines in the yard at various points, and boilers at various points, from which steam might have been carried to work an engine.

131 X Q. 14. You are aware that at the present time, or at the time the caisson was built which is there in use, are you not, that the United States had an abundance of steam for use in connection with the dry dock, and which could have been used, and which was used for pumping out the caisson?

A. I have not been near the works of the dry dock for a good many years, but I presume that there was steam there. There was a boiler at the blacksmith shop, but then if I were going to use pumps worked by machinery, and not man power, on the caisson, I should prefer to have a boiler right on the caisson.

X Q. 15. And you made your plans and estimates under that idea, did you?

A. I think so.

X Q. 16. Now, in what particulars, as near as you can recollect, did you calculate that there would be a saving in cost in using Mr. Schild's

plan as compared with using the former plans which you had already made, and upon which your estimate was based?

A. It was my opinion that Mr. Schild's plan of a caisson was more easily handled, put into its position and taken out. It is almost an automatic arrangement about sinking and filling, and it don't take so much water to sink Mr. Schild's caisson as it did the old-fashioned one, as near as I can recollect. I think every way his plan was the most economical.

X Q. 17. We are speaking about the original filling of the caisson. What was there about his plan, as far as you can now remember, which made his caisson cheaper to build?

132 A. It took less iron, and there was less riveting, and that was the principal element in the cost of construction.

X Q. 18. As a matter of fact, didn't it take a great deal more iron and more riveting?

A. I don't see why it should, from my understanding of his caisson.

X Q. 19. How many decks did the plan of his caisson that he showed you call for?

A. Mr. Schild's?

X Q. 20. Yes, sir.

A. The drawing there shows the number of decks, I think. I don't remember now. (Referring to the drawing, "Schild plan, No. 1.") There are three decks.

X Q. 21. What is this line marked "L. W." on the right-hand figure in this drawing, "Schild plan, No. 1?"

A. Low water.

X Q. 22. What does that mean?

A. That means the state of the tide at low water.

X Q. 23. What does this "H. W." in the same figure refer to?

A. That is high-water mark.

X Q. 24. Why would those letters be placed there to represent high and low water?

A. It is used on all work of that kind to represent a high and low water.

X Q. 25. What, for a floating vessel?

A. Yes. It shows the rise that must be made in the caisson in order to float it into place.

X Q. 26. What do you understand this compartment to be which is underneath the lower deck, shown in this same figure of the drawing, this lower-hold compartment here?

133 A. It is an empty space which can be filled with water if necessary.

X Q. 27. Was that the way that Mr. Schild explained it to you, as you remember it?

A. As I remember it, it was; as near as I can remember it.

X Q. 28. Didn't he explain that to you as an air chamber, put there to obtain flotation for his caisson?

A. Of course it operates as an air chamber when it is empty, and the caisson floats, and when it is filled with water it sinks.

X Q. 29. As he explained this plan to you, wasn't this compartment underneath the lower deck an air chamber?

A. It was.

X Q. 30. Always to remain an air chamber?

A. It might have been. The principle is obvious, that it can be used for that purpose, provided he has water space at another place.

X Q. 31. As Mr. Schild then explained his plan to you, how did he raise his caisson?

A. By pumping the water out by which it was sunk.

X Q. 32. Are you certain of that; that he pumped the water out?

A. Well, I think that was the idea.

X Q. 33. Didn't he explain a plan to you by which the water would flow out automatically?

A. Part of it would flow out.

X Q. 34. Wouldn't all of it?

A. It might all of it have flowed out, but I don't recollect about
134 that. I don't remember particularly his explanation.

X Q. 35 Do you remember now, particularly, the plan of caisson that he then showed you?

A. No, I do not; except that the drawing, "Schild plan No. 1," seems to conform to it generally.

X Q. 36. When were these plans last shown to you before to-day?

A. I think I saw them about six weeks ago.

X Q. 37. Who showed them to you?

A. Mr. Schild brought them to my house.

X Q. 38. Where was that?

A. Where I was then living, at 1614 Washington street, in this city.

X Q. 39. You are not able now, are you, to tell in what particulars the Schild caisson which he then showed you was going to be cheaper to construct than the other caisson, outside of the pumping engine and boiler?

A. I don't know that Mr. Schild made any observation about the cheapness of his caisson. My inference in regard to that I formed from my judgment, comparing in my own mind the construction of the two.

X Q. 40. What I want to get at now, is what there was about the Schild plan that was going to make it cost so much less, in your opinion, than the one which you saw at the Brooklyn dry dock?

A. That it didn't take so much iron and, in my opinion, so much labor to construct it. It was on that ground that I recommended it to Admiral Nichols.

X Q. 41. Did you then think there was any advantage in sinking it by pumping water into those upper tanks?

135 A. I thought it was a simpler arrangement than it was to let water into the lower tanks.

X Q. 42. Did you think there was any advantage from it?

A. Oh, yes; there was an economical advantage, I thought.

X Q. 43. How many decks did the caisson have in the plan which you made?

A. Well, I can't remember exactly the number of decks, but I think there was some five, and perhaps more, decks.

X Q. 44. What was the object in having so many?

A. To stiffen the shell of the caisson.

X Q. 45. Did those extra decks take a good deal of iron and riveting?

A. Well, I don't know that in all cases they were solid decks. Those at Charleston and at Norfolk were made of wood, and I think likely instead of solid decks they were beams that acted as braces.

X Q. 46. Do you recollect how your plans were in that regard, whether the upper decks were made of wood or iron?

A. I forget now about my caisson, about the design, how I did arrange that, but I think I made them with solid decks.

X Q. 47. Well, in that case would it take more iron and more riveting for each deck that was added?

A. My opinion in regard to the quantity of iron was based upon the shell more especially than it was upon any interior bracing.

136 X Q. 48. If you had so many solid decks——. Those decks were made of iron, were they not?

A. Yes, sir.

X Q. 49. Everyone of those decks would weigh a large amount, would they not?

A. If they were solid decks they would be made of iron beams and covered with a moderately light iron, not weighing, perhaps, over, say, ten pounds to the square foot.

X Q. 50. That is, the sheet iron, you mean?

A. Yes, sir.

X Q. 51. Have you any idea now, and can you give a reasonable amount that each one of those decks would weigh, including the iron frame?

A. I haven't any definite idea. I couldn't tell without making a calculation, and I don't allow myself to guess under these circumstances.

X Q. 52. Well, you were guessing that Mr. Schild's caisson would only cost half as much as the other, were you not?

A. Well, I don't want to guess any more than I am obliged to.

X Q. 53. I want to get at the basis of that guess. If you had five decks, and they were solid decks and made of iron, as you think you did have, everyone of those decks would take a large amount of iron, and a large amount of riveting, would they not—everyone of those decks, including the frame work?

A. Yes, sir; if they were made solid; but I see no necessity for making those lower decks solid. There might have existed a necessity for making them solid in the old wooden caissons, but in iron caissons I can

137 not conceive of any such necessity.

X Q. 54. I am enquiring only about the plan which you made and upon which you based your estimate of one hundred and twelve thousand dollars for the caisson.

A. I do not think I made a detailed plan of that caisson that I recommended, but, as I stated in my examination in chief, I based my estimate of its cost upon what the Brooklyn caisson cost.

X Q. 55. When was that Brooklyn caisson built, as near as you can fix the time?

A. Well, I think, as near as I can recollect, it must have been built about 1850.

X Q. 56. Do you know how many decks that Brooklyn caisson had?

A. I do not.

X Q. 57. How many do you think it had, forming an idea of it the best you can?

A. I want to understand what you mean by "decks." Our idea of decks is that they are covered solidly so there shall be a working space all over them, and I am not certain what might have been called decks in the Brooklyn caisson. Some of them were nothing more than beams or braces, and I thought of the cross strengthening, whether actually decks in that case or not. There may have been six, and there may not have been but five, and there may have been more than six, I don't remember.

X Q. 58. Those were all iron, were they?

A. I think they were; yes, sir.

X Q. 59. Now, did you make any allowance for the difference
138 between the value of gold coin and legal tender, United States money at that time—at the time you made the estimate at Mare Island?

A. I don't know whether I did or not.

X Q. 60. When was it that you made that estimate?

A. I made that estimate; well, I don't know. Mr. Wolcott can tell better about that than I can. It probably was about 1870 or 1871; somewhere about that time.

X Q. 61. Was material and labor very much higher in 1871 than it was in 1884; by material I mean iron and steel, and the material that would be used in the manufacture of such a caisson?

A. I can not, at this moment, tell just what the difference was, but I know that labor was higher here, and was all paid in gold coin. Labor was higher in 1871, I think, than it is now, a good deal, because it was paid in gold then, and gold was at a premium.

X Q. 62. The Government paid its employés in greenbacks didn't it.

A. Well, it paid them in greenbacks on a gold coin basis.

Re-examination of Calvin Brown:

R. Q. 1. (By Mr. BOONE.) Have you ever had any experience, Mr. Brown, in transmitting steam from a stationary boiler on shore to a floating, moving structure on the water?

139 A. No, sir; I have only had experience in the transmission of steam on land entirely.

R. Q. 2. Do you know whether there would be any difficulty in making and preserving such a connection between a stationary boiler on shore and this caisson gate?

A. No, sir. No; I can not conceive of any difficulty. Of course I would not want the conduct pipe too long, so as to get down into the water and condense the steam. That would be a provision, to keep it up out of the water so that the steam can go dry to the engine.

R. Q. 3. Supposing the pumps were located on the caisson, the pumps which freed the caisson from water, as the water was pumped out the vessel would rise, wouldn't it?

A. Yes, sir.

R. Q. 4. Then during the process of relieving the caisson from water it would be in continual motion, wouldn't it?

A. Yes, sir.

R. Q. 5. Now, would there be any difficulty, do you know, in conveying the steam from a stationary boiler on shore to the pump, under those conditions?

A. No, sir; I should think not.

R. Q. 6. Suppose, Mr. Brown, that the caisson was out of position, in the stream, and some accident should happen whereby she should take water, fill with water; now, if there was no steam on board what means would you resort to to free the vessel from water?

A. Several means are possible for that purpose, which would be
140 if there was any foundation for a steam boiler on board of the caisson in that condition—you premise that, I believe—you could easily carry a small portable steam boiler on board, or a large one, as the case might be; and another way is by means of floats between the shore and the caisson to carry the steam pipe.

R. Q. 7. Do you know whether or not such an accident is liable to occur to a caisson most any time?

A. Of course accidents might happen to a caisson as well as to anything else, but I cannot conceive of any ordinary circumstances that would injure a caisson.

R. Q. 8. Is there any difficulty ever encountered, Mr. Brown, in freeing the caisson from the mouth of the dock?

A. I have known the old fashioned caisson, and I suppose all caissons might be liable in a greater or less degree, some more and some less, to get jammed in the grooves. I have known the caisson at Norfolk to get jammed in the grooves, and after the pumping of the water out to raise it it would not raise, and it required a great deal of effort, levers, and all sorts of operations, to free the caisson, and when it came up it took a large portion of the masonry with it. That was the case in the old-fashioned caisson there at Norfolk on one occasion.

R. Q. 9. What means, if any, had Mr. Schild devised to obviate that difficulty, if you know?

A. I think—it is my impression now that Mr. Schild's caisson reduces the liability of an accident of that kind, inasmuch as there is not so large a surface exposed. No, that may not be it either; but there is this
141 thing about Mr. Schild's caisson in regard to caissons of that kind, it is not so heavy, as I understand it, as the old caisson would be, and of course the momentum in an accident of that kind would not be so great.

R. Q. 10. Did he state to you the object of the balancing tanks which he used in each end of his vessel?

A. Yes, sir.

R. Q. 11. What was their object?

A. The object was to keep the caisson on an even keel.

R. Q. 12. What was his object in keeping it on an even keel?

A. Well, it is somewhat essential in putting it into its groove; you don't want one end to draw more water then the other.

R. Q. 13. How would it be in removing it from its groove?

A. I understand in the caisson at Mare Island there is no groove; there is simply a shoulder to the dock. There is no groove there. I think that is shown on the plan.

Recross-examination of Calvin Brown:

R. X Q. 1. (By Mr. WHEATON.) Now, when constructed with a shoulder as at Mare Island, instead of grooves as in the cases you have described,

that kind of an accident which you have mentioned as having taken place at Norfolk is not liable to occur, is it?

142 A. As far as the sides of the groove are concerned there is a reduced surface for the caisson to act on, and the danger is limited in consequence of that fact. I have never used a caisson with a simple shoulder. All the caissons I have used were set in a groove.

R. X Q. 2. (By the MASTER.) Do you know, Mr. Brown, what, if anything, would be the difference in cost of construction of an iron caisson at the time when you made your estimate as to the old caisson, and at the time that this present caisson was built, to wit, in 1884?

A. I don't know what the difference would be.

R. X Q. 3. Do you know what would be the difference in the cost of material at those several times?

A. I couldn't determine that without inquiry.

R. X Q. 4. Can you state how much you calculated in your estimate as the cost of the engine and boiler to be put on the caisson, approximately or exactly?

A. Judging from present prices I should suppose—this is a mere guess of mine——

R. X Q. 5. Well, don't guess.

A. Well, then, I have no means of stating what that would be.

R. X Q. 6. What, if you can say, would be your estimate of the difference in the cost of construction of the two caissons?

A. I couldn't tell that either without a careful estimate.

R. X Q. 7. What would you say was the difference in the
143 cost of the material used in the two caissons in 1884, at the time this caisson was built?

A. I can't tell that either, not decisively; I should have to inquire.

R. X Q. 8. I understood you to say it took less iron and less labor in your opinion, to make Schild's caisson than it would to make the old one.

A. Yes, sir; that is my idea.

R. X Q. 9. Can you give any estimate of the difference.

A. I can not.

R. X Q. 10. (By Mr. WHEATON.) Do you know how much iron and how much steel would have been used in the caisson of which you made a general plan and estimate in 1871.

A. No; I have no recollection of those details at all.

R. X Q. 11. Do you know whether any of it was steel or not?

A. Steel was not a common article of construction at that time. It has been quite recently that steel has been used, and my estimate must have been based entirely upon iron.

R. X Q. 12. Do you know how much iron and how much steel is used on this caisson at Mare Island?

A. I do not.

R. X Q. 13. (By the MASTER.) As to size, how did the caisson which you originally proposed to make for the Mare Island navy-yard compare with the size of that used at the Brooklyn navy-yard which you have referred to?

A. I think the Mare Island caisson was much larger.

R. X Q. 14. How much larger, if you can tell?

144 A. I think it was deeper and wider. I can't tell exactly how much, but there are documents to show whatever it was.

R. X Q. 15. (By Mr. WHEATON.) And you made allowance for that difference when you were making your estimate, did you?

A. I think I did; yes, sir.

(Complainant rests.)

(A recess was here taken, in conformity with agreement of counsel, until two o'clock this afternoon.)

Christopher C. Walcott.

MONDAY, *March* 24, 1890. Afternoon.

Present: Mr. Boone, of counsel for complainant; Mr. Wheaton, of counsel for respondents.

Examination in chief of Christopher C. Walcott on behalf of respondents.

Q. 1. (By Mr. WHEATON.) State your name, age, place of residence, and occupation.

A. My name is Christopher C. Walcott, my age forty-two years; I am stationed at the navy-yard at Mare Island, and I am civil engineer of the Navy and stationed at the navy-yard at Mare Island, and am in charge of all the engineering work of the department of yards
145 and docks, and have been there since the third of February, 1888. The construction of the dry dock and superintendent of the caisson, pumps, and so forth, has been a part of my duties during this time.

Q. 2. You are one of the defendants in this suit, are you?

A. I am.

Q. 3. You know each of the other defendants?

A. I do. Admiral George E. Belknap, Naval Constructor Joseph Feaster, and Jesse Diamond, who is now dead, having died in November or December, 1889.

Q. 4. Has either of those defendants built or assisted in building any caissons since October 23, 1883?

A. No, sir.

Q. 5. What, if anything, did Admiral Belknap have to do with that caisson at the navy-yard at Mare Island at any time?

A. Nothing; he was not there at the yard at all. He was simply com-'andant of the yard.

Q. 6. As com'andant of the yard what did he have to do with the caisson, personally?

A. Nothing whatever.

Q. 7. Did any one acting by his direct orders have anything to do with the caisson?

A. I did, and the naval constructor did.

Q. 8. Did he give you directions what to do with the caisson?

A. No; except in a general way, to use the caisson in the matter of docking and undocking vessels, and to keep it in repair, general orders issued to that effect, to operate the dock. The operations and carrying the dry dock would comprise the whole thing.

Q. 9. Did he have anything to do with that caisson at all
146 before it was delivered and finished at Mare Island?

A. Nothing whatever. He was not here.

Q. 10. Please state fully all that you have had to do with that caisson from the commencement?

A. I would like to read over my last testimony. I went into that matter upon that occasion, and I don't remember what I testified. My original testimony covers everything on that point.

Q. 11. I understand you to say that you superintended the construction of the caissons?

A. I did.

Q. 12. Please state all that you did in so superintending the construction of the caisson.

A. I inspected the metals and materials to see that they were of proper strength and quality and in every way conformed to the terms of the contract entered into by the Union Iron Works and the Government, as represented by Rear-Admiral Nichols, of the Navy Department, as party of the second part. I also examined it to see that the workmanship was of the quality specified in this same contract. That was the limit of my duties.

Q. 13. Now, in examining to see if the workmanship was right state whether or not you directed any of the workmen in the building of that caisson?

A. None whatever.

Q. 14. State whether or not you had anything to do with directing the construction of the caisson?

A. Nothing whatever.

Q. 15. State whether or not any of it was constructed or built under your personal directions or personal supervision.

147 Mr. BOONE. That is objected to as leading.

The MASTER. Although the question is "whether or not," it is as suggestive as a question can be. The objection is sustained.

Q. 16. What part, if any, of that caisson was constructed under your personal direction or supervision?

A. All of it was constructed under my personal supervision. I was inspector of that in its construction, as I stated before. I had to examine every part of that caisson to see that it conformed to the terms of the contract.

Q. 17. When did you do the examining?

A. I would do it at such stated times as the constructors would notify me in the progress of the work that a certain amount of work was done, or whenever any question arose as to whether their interpretation of the contract was right. I was down there probably twenty or thirty or forty times during the progress of the work, and each time I went over the work.

Q. 18. In supervising the construction of the work, what did you do?

A. I had the material tested and I examined all the materials brought on to the work, and I then examined all the workmanship of the work as far as it was possible to do so in the limited time that I had for such work.

Q. 19. My questions refer to the supervision of the work itself.

A. I had nothing to do with the supervision of the work; I simply tested it or examined it as an inspector to see whether or not the
148 work had been properly performed. With the active prosecution of the work I had nothing whatever to do.

Q. 20. As you have used the term "work," state whether you referred to the work after it was completed or whether you referred to the labor of construction?

A. I referred to the work as an accomplished fact.

Q. 21. State what interest, if any, you or either of the other defendants have at any time had in that caisson.

Mr. BOONE. That is objected to as immaterial and irrelevant.

The MASTER. The objection is overruled.

A. None whatever.

Q. 22. What advantage, if any, was it to you or either of the other defendants whether the caisson cost one hundred and twelve thousand dollars or whether it cost fifty-six thousand dollars to build it?

A. No advantage at all. We didn't pay for it. We were not parties to the contract. We had no interest in it except the general interest that all Government officers have in the proper and economical prosecution of work.

Q. 23. What kind of an interest was that, so far as dollars and cents were concerned?

A. Oh, none whatever.

Q. 24. What advantage, if any, has it been to you or either of the other defendants whether it cost more or less for repairs upon that caisson since it was built?

A. None whatever. No advantage whatever. I might qualify
149 that by saying, except that if we did not take care of it it might be greatly to our disadvantage, because we would be removed from our positions.

Q. 25. What advantage in dollars and cents, if any, has the use of that caisson been to you or any of the other defendants as compared with the use of any other caisson that might have been built there?

A. No advantage at all.

Q. 26. How often has that caisson been painted since it was at Mare Island?

A. Once, I think.

Q. 27. How long since it was painted.

A. One side, I think, was painted three years ago and the other was painted four years ago.

Q. 28. Is that all the painting that it has received?

A. Yes, sir; since it was completed; since it has been turned over to the Government.

Q. 29. What changes, if any, have been made in that caisson since the interlocutory decree was entered in this case?

Mr. BOONE. I object to that as immaterial and irrelevant.

The MASTER. What is the purpose of the question, Mr. Wheaton; to show that certain changes have been made, and that the caisson works just as efficiently as before, or something of that kind?

Mr. WHEATON. I propose to show that everything in the shape of an infringement has been taken out of it sometime ago.

The MASTER. I will overrule the objection.

150 Mr. BOONE. I object to that on this ground, because it is leaving the witness, or counsel, or somebody else, to say whether or not the machine infringes now, and such evidence is incompetent for that purpose.

The MASTER. The objection is overruled.

A. The bulkheads forming the balancing tanks at either end of the caisson on the between decks have been removed, leaving the decks entirely free from end to end. The mechanism for operating the double wicket-gates through the keel-plate has been entirely removed. The valves leading from the bottom balancing tank into the hold of the vessel have been removed and the holds closed up. The double wicket-gates have been bolted together through the keel-plate and are immovable. All this work was done—I think it was done in the early part of October, 1889, the latter part of September or the first of October; I can not give the exact date.

Q. 30. How long since there has been any openings of any kind through the keel of that caisson?

A. Ever since that date; the date that those things were fastened up.

Q. 31. That don't say whether there have been openings since that date, or whether there have not.

A. There have been no openings through that keel since the day we bolted the double wicket-gates together in the keel-plate last October.

Q. 32. How many of those gates were bolted together?

A. There are sixteen wickets bolted, which cover eight openings through the keel-plate.

151 Q. 33. What do you mean by "the wickets?"

A. I mean the wicket-gates "C" as set forth in the patent of George F. Schild.

Q. 34. In bolting those gates together through how many of the gates did each bolt pass?

A. Well, that is impossible for me to say, because we can't tell. We had to bolt from the inside of the dock, and couldn't get only on one side; but we were supposed to have bolted through both gates and the metal plate itself. The operation was to bore first through the frame of the gate, then the gate, then the keel-plate on one side, then the frame, then the gate, and then the frame on the other side; but whether we got through all those we can't tell, because the water is on the outside and we can't see it.

Q. 35. Was that done by boring one straight hole through all those parts?

A. Yes, sir; one for each bolt. There are four bolts in each one of these separate openings.

Q. 36. When you say there are sixteen gates bolted together, do you mean that the whole sixteen were bolted to each other?

A. In pairs, on either side of the opening. They are bolted together in pairs. The gates are all of them closed down hard together, as far as we could force them down, and we took off all the movable parts before we put the caisson back, and after it was put back we went down in there and bored these holes through each pair of gates and frame and keel-plate, which made it impossible to open or use those gates.

152 Q. 37. Please take the patent and show what position the gates are left in as they are now bolted?

A. The double wicket gates "G," which are on either side of the keel-plate "A," were forced home to the bottom, so that they fully covered the openings through the keel, as shown at the central gate, marked "G" in fig. 5 of the complainant's patent. They were then bolted by four bolts in each set of two wicket-gates, so as to be immovable, and in a closed position, as shown at the central gate "G" in fig. 5 of the complainant's patent.

Q. 38. Have you ever read the specification of the complainant's patent?

A. I have.

Q. 39. State whether or not there is any compartment in the caisson at Mare Island corresponding to the air chamber "e" in complainant's patent.

A. There is no air chamber at all in the caisson-gate at Mare Island.

Q. 40. How many decks has that caisson as it is now used at Mare Island?

A. Two decks; upper deck and between decks.

Q. 41. Has it a hold or not?

A. Yes, sir; it has.

Q. 42. What forms the bottom of that hold in the caisson at Mare Island?

A. The bottom of the vessel itself, or the bottom of the floating part of the caisson itself.

Q. 43. Is that either one of the decks that you have mentioned, or not?

A. No; it is not.

Q. 44. Can you tell whether the placing of that air chamber "e"
153 as shown in the complainant's patent would cost money or not?

A. Why, certainly it would cost money.

Q. 45. Which would cost the most money to construct, the caisson in the shape that it now is, with the changes in it which were made last October, or to construct it as it was constructed by the Union Iron Works?

Mr. BOONE. That is objected to as immaterial and irrelevant, what it would cost now to make one. The other is not a question before the master.

The MASTER. It may appear from the testimony of the witness that it would cost more to have originally constructed it as it now is, in which case the testimony would be advantageous to you. The objection is overruled.

Mr. BOONE. We will take an exception.

A. It would cost more money as it was originally built.

(It is agreed by both counsel for complainant and respondents herein that the testimony in the case in chief shall be considered as in evidence in this proceeding.)

Cross-examination of Christopher C. Walcott.

X. Q. 1. (By Mr. BOONE.) Who did you relieve, Mr. Walcott, when you took your present position as civil engineer at Mare Island?

154 A. Captain Irwin, of the United States Navy, was in charge of the department of yards and docks when I took charge.

X Q. 2. Who did he relieve?

A. That I don't know; that was before I came out.

X Q. 3. Did you know Calvin Brown?

A. I met Calvin Brown, who was the former civil engineer of the yard. He was in Washington before I came out, and I saw him there.

X Q. 4. You knew that he had occupied that position, did you?

A. Oh, yes.

X Q. 5. You knew that he had made estimates and submitted plans to the Government, didn't you, for the construction of the dry dock and gate for closing its mouth?

A. No, Mr. Boone, I didn't know that. I didn't know anything about the submission of plans for a gate until after I heard Mr. Schild's testimony here the other day. I never saw them, and if I had been put upon the stand that day I would have said there was none existed; but when I went back from here that day I had them search the records of the office, so as to be sure, and they were found hidden away there in the office. I have never seen the plans, but I had seen the estimates for it.

X Q. 6. You knew Mr. Schild when he was employed at Mare Island, didn't you?

A. Yes, sir; he was draughtsman of construction.

X Q. 7. He was there when you were there, was he?

A. Yes, sir; he was there up to the time—I don't know what year he left. He was there some three or four years, at the same time I was there.

155 X Q. 8. He showed you his plans of the caisson gate, didn't he?

A. Yes, sir.

X Q. 9. You examined them, didn't you?

A. I did.

X Q. 10. Did you make any copy of them?

A. I did not, personally, but Mr. Schild, at my request, did so.

X Q. 11. What did you do with that copy?

A. I sent it on to the Chief of the Bureau of Yards and Docks with a recommendation that they accept the plans, and build a caisson upon those plans.

X Q. 12. Upon what ground did you base your recommendation?

A. I thought it was a very good caisson.

X Q. 13. Did you say anything about the expense of its construction?

A. That I am not quite sure of, but I probably did.

X Q. 14. Didn't you say that it would cost—that a caisson-gate constructed after the plan of Mr. Schild would cost about half of what one built according to the plans suggested by Mr. Brown would cost?

A. Not quite as much as that; not half.

X Q. 15. You are sure that you did not make that remark, or any remark having that substance?

A. As sure of it as anybody can be without examining the matter. I don't think so.

X Q. 16. Can you produce a copy of that report?

A. I can.

156 X Q. 17. Will you do so? Will you send it to the master in chancery of this court to be introduced in evidence herein as part of your testimony?

A. With pleasure. I can produce a copy; I can not produce the original, but I can produce a copy from my press copy book.

Mr. BOONE. Then it is understood that upon its receipt here it will be considered as evidence in the case introduced by complainant in connection with the testimony of this witness.

X Q. 18. The reports to which I refer, Mr. Walcott, are one dated April 22, 1882, and another dated March 14, 1883.

A. I will give you everything with reference to the case that is in my office.

X Q. 19. You superintended the construction of the caisson gate, did you?

A. Yes, sir; I did.

X Q. 20. By instructions from whom?

A. I am not sure whether it was the Secretary of the Navy or the Chief of the Department of Yards and Docks.

X Q. 21. Well, you did that as the agent of the Government to attend to that part of the business?

A. Well, I can not say as the agent. I was simply an officer of the Government, and I went there, as such officer, to inspect the material.

X Q. 22. And that was a part of your duty, to oversee the construction of this caisson gate, was it?

A. It was, to superintend. I went there to inspect the material and see that the workmanship corresponded to the terms of the contract.

157 X Q. 23. The caisson gate is part of the dry dock as it is used now, is it?

A. Yes, sir.

X Q. 23. And it is under your charge, isn't it?

A. No, sir; the naval constructor has charge of that now.

X Q. 24. Well, it has been under your charge?

A. Yes, sir.

X Q. 25. And when it was under your charge you managed and superintended it as agent of the Government?

A. I had charge of the dock there, and had charge of that caisson gate as an appurtenance to the dock; yes, sir.

X Q 26. How came you to make those changes last October?

A. Because I thought it was right to do so.

X Q. 27. Who advised you to do so?

A. Counsel.

X Q. 28. Mr. Wheaton?

A. He was one of them, and Mr. Carey the other.

X Q. 29. The object of making the changes was to evade the complainant's patent, wasn't it?

A. Unquestionably; so we could use the caisson.

X Q. 30. You had no other object in making these changes, had you, except to avoid the injunction issued in this case?

A. Unquestionably that was the intention.

X Q. 31. Now, what is it that makes that caisson gate float when you remove the water, Mr. Walcott?

A. How do you mean?

X Q. 32. What makes it rise up when you pump the water out?

A. It is the water displaced by the form of the caisson.

158 X Q. 33. What is it that causes its buoyancy?

A. The fact that the specific gravity of the fluid displaced is greater than that of the body which displaces it.

X Q. 34. The caisson gate is made of iron, isn't it?

A. Yes, sir.

X Q. 35. Iron is heavier than water and sinks, doesn't it?

A. The specific gravity is greater; yes, sir.

X Q. 36. Then it is not the buoyancy of the material that the vessel is made of?

A. I didn't say that. It is the form.

X Q. 37. What form is it that makes it rise up when the water is pumped out?

A. Well, we take the metal and shape it in such a manner that in placing it into a fluid the amount displaced by its form—the specific gravity of the amount displaced by its form—is greater than the specific gravity of the material of which it is composed.

X Q. 38. Now, the hull of this boat is not made of solid iron, is it?

A. No, sir.

X Q. 39. If it was it would not float, would it?

A. No, sir; not in its present form.

X Q. 40. Now, when iron is made into the form of a hull so as to leave an air space inside it becomes buoyant, doesn't it?

A. No, sir. You have got to make it so proportioned, or so proportion your weights to your form that they shall always have a greater amount of displacement in the liquid than the weight of the material of which it is composed.

159 X Q. 41. Does the gate displace more water when it is down then when it is in its elevated position?

A. Unquestionably.

X Q. 42. Why is that?

A. Because by adding water to the caisson gate itself, we have increased its specific gravity.

X Q. 43. Now, when you remove the water what takes the place of the water?

A. Air.

X Q. 44. Then the vessel becomes buoyant when the air replaces the water?

A. Yes, sir; it becomes buoyant.

X Q. 45. Then it is the air in the caisson gate taking the place of the water which is removed that causes it to rise when the water is pumped out, is it not?

A. No, sir; the air is not necessary to that function. It is incident to the function, but not necessary to the function.

X Q. 46. Well, it is there isn't it?

A. Yes, sir; but I don't want you to pin me down to what is not true.

X Q. 47. Well, as a matter of fact, in the caisson gate at Mare Island, when you remove the water by means of pumps it is replaced by air, isn't it?

A. Yes, sir.

X Q. 48. And as the water is replaced by air the gate floats to the surface, doesn't it?

A. Yes, sir; but not as a consequence of the air replacing the water. The mere fact of the removing the water does that. Upon the water being pumped out then the caisson rises.

160 X Q. 49. Now, you say that the double wicket gates have been recently riveted together?

A. No, sir; bolted.

X Q. 50. The gates are there yet?

A. Yes, sir; they are there yet.

X Q. 51. They cover the openings in the keel, don't they?

A. Yes, sir.

X Q. 52. What means do you employ now for getting rid of the water in the dock?

A. The same as we did before; pump it out with large pumps.

X Q. 53. And what means do you employ for letting the water into the dock?

A. The water is let into the dock by opening the filling culvert gates.

X Q. 54. You had that culvert there before you closed up those gates, didn't you.

A. Yes, sir; when we built the culverts we built them in the masonry of the dock.

X Q. 55. They were there when you used those gates?

A. Yes, sir.

X Q. 56. Now, you use the culverts to fill the dock and don't use the gates?

A. Yes, sir.

X Q. 57. And it takes proportionately longer to fill the dock, doesn't it?

A. No, sir; shorter.

X Q. 58. Didn't the gates supply some water to fill the dock?

A. Yes, sir; but we never used the culverts in conjunction with the gates.

X Q. 58. For what purpose did you use the wicket gates in the caisson?

161 A. We used them alone for filling the dock. We didn't use those other gates. Time was no element, and we kept them there for double safety.

X Q. 59. If anything should happen to the culverts you would not be able to fix the dock, would you, if you couldn't fill it through the wicket gates?

A. Yes, sir; through the pumps.

Re-examination of Christopher C. Walcott:

R. Q. 1. (By Mr. WHEATON.) Do you know whether the caisson is made of iron or steel?

A. Steel, I think; except the eye beams underneath.

R. Q. 2. (By the MASTER.) Mr. Walcott, I will read to you *cal*im 1 of the patent sued on, and ask you what of the elements there mentioned are in the caisson gate at Mare Island since the changes which you have spoken of which were made in September or October last, and what of the elements here mentioned are not now in that gate? "A caisson or floating gate consisting of the Plate A, having its bottom and ends shaped like and adapted to fit the entrance of the dock, lock, or harbor, the buoy or floating vessel, or body B, secured to the top of the plate, the water tanks F on each end of the body, and having outlets f above the surface of the water, and suitable valved openings in said body near the water

line, to admit water when the caisson is depressed by the full
162 tanks, and to allow its escape when the tanks are drained through the outlets, substantially as herein described."

A. All these elements are there excepting the water tanks "F" on each end of the body and the outlets "f" above the surface of the water, and the valve openings in the said body near the water line is depressed with full tanks. That last element was never in there.

R Q. 3. I will read the second claim of the patent sued on, and ask you what of the elements there mentioned are now in that caisson since the changes were made in September and October last, as you have testified, and which of said elements, if any, are not now in said caisson: "A caisson or floating gate, consisting of the plate A, having its bottom *ad* and ends shaped like and adapted to fit the entrance of the dock, lock, or harbor, the buoy or floating vessel or body B, having the lower water deck E, an air chamber e under said deck, and valved openings H H on a line with said deck, and the water tanks F on each end of the body, said tanks having outlets f above the surface of the water, substantially as herein described."

A. They are all there except the lower water deck "E," the air chamber "e" under said deck, the valved openings "H H" on a line with said deck, and the water tanks "F" on each of the body, said water tanks having outlets "f" above the surface of the water, substantially as herein described.

R Q. 4. I will read claim 3 of the patent sued on, and ask you what of the elements therein mentioned are now in that gate since the
163 changes that were made in the construction of that caisson in September or October last: "A caisson or a floating gate, consisting of the plate A, for closing the entrance of the dock, lock, or harbor, the buoy or floating vessel B, having the lower water deck E and air chamber under said deck, valved openings H H on a line with said deck, and means for closing said valved openings, consisting of the frame p, swinging cover r, toothed quadrant q, worm-gear s, and spindle u, substantially as herein shown and described."

A. The only elements there mentioned contained in the caisson as now used are the plate "A" and the buoy or floating vessel "B."

R. Q. 5. I read claim 4 of the patent sued on, and ask you what of the elements therein mentioned are contained and what omitted in the caisson as it is now used since the changes which were made in September or October last as you have testified: "In a caisson or floating gate the plate A, having its bottom and ends shaped like and adapted to fit the entrance of the dock, lock, or harbor, and the body B, for floating and sinking said plate, in combination with the double wicket gate G, covering on each side openings G′ in said plate, and means for operating said gates, substantially as herein described?

A. The plate "A" and body "B" are the only elements there mentioned which are now in the caisson as it is now used.

R. Q. 6. I read claim 5 of the patent sued on, and ask you what of the elements therein mentioned are contained in the caisson as now used:

"In a caisson or floating gate the plate A and floating body B, in
164 combination with the wicket gates G on each side of openings G′ in said plate, and the means for operating said gates, consisting of

the rods w, pipes Y, racks z, and pinion Z, all arranged and operating substantially as herein described."

A. The plate "A" and the body "B" are the only elements in that combination which now exist in that caisson.

R Q. 7. (By Mr. BOONE.) Refer now to claim 4 of the patent sued on, Mr. Walcott. The caisson gate at Mare Island now has the plate "A," has it?

A. Yes, sir.

R Q. 8. And that plate is shaped to fit the entrance of the dock, lock, or harbor?

A. Yes, sir.

R Q. 9. And has the body "B" for floating and sinking this plate?

A. Yes, sir.

R Q. 10. And those wicket gates are there?

A. No, sir.

R Q. 11. Didn't you testify that those gates were there, but riveted together?

A. But they are not gates any longer.

R Q. 12. Well, the gates are there?

A. Well, if you call those inner pieces of iron gates, yes.

R Q. 13. Well, there were openings made through that keel?

A. Yes, sir.

R Q. 14. And those plates closed those openings?

A. Yes, sir.

R Q. 15. And you have riveted them together?

A. Yes, sir.

R Q. 16. And they are there to-day?

A. Those pieces of metal are; yes, sir.

165 R Q. 17. And they are covering the openings, are they not?

A. Yes, sir.

R Q. 18. Then, in relation to that claim 4, you would find that the caisson gate at Mare Island to-day has those wicket gates there covering these openings, wouldn't you?

A. The wicket gates are not there, because they do not any longer exist; they are fastened together.

R Q. 19. Well, they exist, but they are immovable?

A. Yes, sir; they are there.

R Q. 20. All you would have to do to make them movable would be to remove those bolts?

A. No, sir; we would have to put on all the apparatus to work them.

R Q. 21. If the bolts were removed, you could pry them open, couldn't you?

A. Possibly you could.

R Q. 22. All you would have to do to make them operative would be to remove those bolts, wouldn't it?

A. Yes, sir; the same as if we had any other piece of metal over them. Wha' we intended to do was to take the caisson and put it on the sectional dry dock; but I found that my appropriation was running low, and we couldn't do that.

166 *Stipulation that the testimony taken shall be considered as taken under the decree as amended, etc.*

THURSDAY, *September* 4, 1890.

Present: Mr. Miller, of counsel for complainant; Mr. Wheaton, of counsel for respondent.

It is stipulated by and between counsel for the respective parties herein that the testimony heretofore taken herein shall be considered as having been taken under the decree as it now stands, as amended.

The matters involved in the reference are argued by counsel, and submitted.

167 *Complainant's exhibit—Schild estimate.*

U. S. circuit court, N. Dist. of Cal.

SCHILD *vs.* BELKNAP. } No. 4161. Reference for accounting.

Complainant's exhibit—Schild estimate—S. C. H., master.

Comparison of cost and maintenance between Schild's patent caisson and that of the old style.

	Old style.	Schild's patent.	Difference in favor of Schild's patent.
Estimate of original cost, based upon actual weights and amounts of material used in caissons of like dimensions of the two systems, and the contract price which was paid for building the caisson for the stone dry-dock at navy-yard, Mare Island	$115,000.00	$58,000.00	$57,000.00
Repairs to hull for one year. In the old style this estimate includes repairs to boiler, engine, and pump, which Schild's patent does not possess	$420.00	$115.00	$270.00
Painting structure during one year. Estimate based upon the superficial area of the caissons at the usual contract price per square foot	$1,200.00	$750.00	$450.00
Cost of handling for one dockage, based upon the expenses incurred in operating the caissons at the docks at navy-yard Mare Island, and at Hunters Point, San Francisco, Cal.	$15.50	$6.25	$9.25

This shows a saving in the yearly expense of maintenance of $720.00, and a difference of $9.25×2=$18.50 for each vessel docked in favor of Schild's patent.

GEO. F. SCHILD,
Naval Architect.

168 *Letter of C. C. Wolcott to Gen. John T. Carey, U. S. attorney.*

DEPARTMENT OF YARDS AND DOCKS,
CIVIL ENGINEER'S OFFICE, U. S. NAVY-YARD,
Mare Island, Cal, September 18, 1890.

SIR: I have the honor to acknowledge receipt of your communication of the 15th instant, with inclosure from Hon. S. C. Houghton, master in chancery, relative to forwarding certain papers to be introduced as an exhibit in connection with my evidence in the case of Schild vs. Belknap.

In reply thereto I have to state that I find that the records and copies of the papers were forwarded to the authorities at Washington some time ago and have not been returned. It is therefore impossible for me to comply with the request of the master in chancery.

I am, very truly, yours,

C. C. WOLCOTT,
Civil Engineer, U. S. N.

To Gen. JOHN T. CAREY, *U. S. Attorney,*
Northern District of California, San Francisco, Cal.

1 inclosure. Letter of master in chancery, S. C. Houghton.

(Endorsed:) Master's report on reference for accounting. Filed Oct. 21, 1890, L. S. B. Sawyer, clerk, by F. D. Monckton, deputy Clerk.

169 *Exceptions to master's report.*

In the circuit court of the United States for the northern district of California.

GEORGE F. SCHILD, COMPLAINANT,
vs.
GEORGE E. BELKNAP, JOSEPH FEASTER, C. C. Wolcott, and Jessie Diamond, respondents.

Exceptions of the above-named defendants to the report of S. C. Houghton, master in chancery, filed October 21st, 1890, to whom was referred the case by an order of court for taking and stating an account of the damages suffered by complainant, and gains, profits, and advantages realized by the defendants by reason of their infringement of the patent sued on.

First exception.—For that the said master in and by his said report finds that one caisson gate was made by the said defendants
170 since the 23d day of October, 1883, which was an infringement upon the patent sued on, whereas it appears from the evidence, and the master should have found as a fact, that neither the said defendants nor any or either of them ever made such caisson gate or any caisson gate whatever since the 23d day of October, 1883, or at any time whatever, but that the caisson gate referred to in and by the said report as having been made by the said defendants was made by the Government of the United States at the Government navy-yard at Mare Island, and that these defendants did not make said caisson, nor did they have anything to do with the making thereof.

Second exception.—For that the said master in and by his said report has found that the gains, profits, and advantages which have arisen and accrued to the defendants since the 23d day of October, 1883, from infringing the exclusive right of the complainant by the making and using of the
171 improvement patented in the first and fourth claims of the complainant's Letters Patent No. 287178, amount to $40,000, whereas it appears from the evidence, and the master should have found, that no gains, profits, or advantages have arisen or accrued to the defendants, or to either of them, since the 23d day of October, 1883, from infringing the exclusive right of complainant by the making and using of the improve-

ment patented in the first and fourth claim of the said letters patent, because it appears from the evidence that the said defendants have not, nor any or either of them have at any time ever made any such caisson gate or any caisson gate, nor have they ever used any such caisson gate or any caisson gate whatever, nor have any gains, profits, and advantages arisen to them from any such use, but the use of the caisson gate shown from the evidence appears to be and was a use by the Government of the United States at the Government navy-yard at Mare Island aforesaid.

172 *Third exception.*—For that it appears from the evidence that these defendants have not, nor any or either of them have ever, made or used any caisson gate whatever, nor have they ever realized any gains, profits, or advantages from the making or using of any caisson gate, but the caisson gate referred to in the master's report was a caisson gate that was built by the Government of the United States at the Government navy-yard at Mare Island, and was used by the Government and for the sole benefit of the Government at said navy-yard, and that these defendants were simply officers in the employ of the Government at said navy-yard, and whatever they did in relation to said caisson gate was done under and by virtue of their position as officers of the United States Government, and by authority from and the orders of the Chief Executive of the United States Government, for which reasons these defendants say

173 they are not responsible or liable to the plaintiff for the gains, profits, and advantages which have arisen or accrued from the making or using of the said caisson gate, nor for any part thereof, but that the Government of the United States alone is liable and responsible therefor.

Fourth exception.—For that the said master, in and by his said report, has found that the gains, profits, and advantages which have arisen and accrued to the defendants since the 23d day of October, 1883, for infringing the exclusive right of complainant by the making and using of the improvement patented in the first and fourth claims of the complainant's letters patent No. 287178, amount to $40,000, whereas it appears from the evidence and the master should have found that no gains, profits, or advantages have arisen or accrued to defendants or to either or any of them since the 23d day of October, 1883, or at all from infringing the exclusive right of complainant by the making and using of the improve-

174 ments patented in the first and fourth claims of said letters patent because, should defendant be held liable for making and using said caisson gate, it appears from the evidence that a caisson gate of the same dimensions, form, and pattern as the one in question, without infringing upon the first and fourth claims of said letters patent, might have been constructed and built at the same cost, and that there was no saving resulting to the respondents or to the Government from making and building the caisson gate in question, nor have any gains, profits, and advantages arisen to the defendants or to the Government from making and using the caisson gate in question.

In which above particulars these defendants aver that the said master's report is erroneous and pray the court that the exceptions may be allowed and that the said report may be set aside.

Respectfully submitted.

JOHN T. CAREY,
U. S. Attorney, for Defendants.

175 (Endorsed.) Copy received Octo. 25–90, Jno. L. Boone, Langborne & Miller, sols. for complainant. Filed Oct. 25, 1890. L. S. B. Sawyer, Clerk. By F. D. Marckton, Deputy Clerk.

176 *Order overruling exceptions to masters report and entering decree.*

At a stated term, to wit, the July term, A. D. 1890, of the circuit court of the United States of America of the ninth judicial circuit, in and for the northern district of California, held at the court room in the city and county of San Francisco, on Monday, the 27th day of October, in the year of our Lord one thousand eight hundred and ninety.

Present, the honorable Thomas P. Hawley, U. S. district judge, district of Nevada.

GEORGE F. SCHILD
vs.
GEORGE E. BELKNAP, ET AL. } No. 4161.

By consent of counsel, J. L. Boone and J. H. Miller, esqs., for complainant, and J. T. Carey, U. S. attorney, for respondents, it is ordered that the exceptions to the master's report herein be submitted without argument. Thereupon it was ordered that said exceptions be, and the same hereby, overruled, and a decree entered herein in accordance with said master's report.

177 *Enrollment.*

In the circuit court of the United States, ninth circuit, northern district of California.

GEORGE F. SCHILD, COMPLAINANT,
vs.
GEORGE E. BELKNAP, ET AL., RESPONDENTS. } No. 4161.

The complainant filed his bill of complaint herein on the 20th day of January, 1887, which is hereto annexed.

A subpœna to appear and answer in said cause was thereupon issued, returnable on the seventh day of March, A. D. 1887, which is hereto annexed.

The respondents appeared herein on the 7th day of March, 1887, by John T. Carey, esq., United States attorney, their solicitor.

On the 2d day of May, 1887, a plea in abatement was filed herein, which is hereto annexed.

On the 5th day of September, 1887, a plea to the jurisdiction of the court was filed herein, and is hereto annexed.

On the 23d day of January, 1888, an order overruling plea was
178 made and entered herein, a copy of which order is hereto annexed.

On the 7th day of March, 1888, a rule taking said bill of complaint pro confesso for failure to answer was entered herein, and on the 20th day of April, 1888, an interlocutory decree was filed and entered herein, which interlocutory decree is hereto annexed.

On the 11th day of June, 1888, an answer was filed herein and is hereto annexed.

On the 28th day of November, 1888, an order vacating the default and the decree entered thereon against respondents was made and entered herein, a copy of which order is hereto annexed.

On the 25th day of July, 1889, another interlocutory decree was filed and entered herein, and is hereto annexed.

On the 21st day of October, 1890, a master's report was filed herein, and is hereto annexed.

Exceptions to said master's report were filed herein on the 25th day of October, 1890, and are hereto annexed.

179 On the 27th day of October, 1890, an order overruling said exceptions to said master's report, etc., was made and entered herein, a copy of which said order is hereto annexed.

Thereafter a final decree was filed and entered herein in the words and figures following, to wit:

Final decree.

In the circuit court of the United States for the northern district of California.

GEORGE F. SCHILD, COMPLAINANT,
vs.
GEORGE E. BELKNAP, JOSEPH FEASTER, C. C. Wolcott, and Jessie Diamond, respondents. } No. 4161.

At a stated term of the circuit court of the United States, ninth judicial circuit, for the northern district of California, held at the court-
180 room thereof, in the city and county of San Francisco, on Monday, the 27th day of October, A. D. 1890.

Present, the honorable Thomas P. Hawley, judge of the district court of the United States for the district of Nevada, and sitting as circuit judge of the circuit court of the United States for the northern district of California, pursuant to the laws of the United States in that behalf made and provided.

This cause having been heard by the court on the pleadings and proofs, documentary and oral, taken and filed therein, and an interlocutory decree having been made, entered, and filed in said cause on the 25th day of July, A. D. 1889, wherein it was ordered, adjudged, and decreed that the letters patent of the United States issued on the 23d day of October, 1883, to George F. Schild, complainant herein, for a "caisson gate," and numbered 287178, were good and valid in law; the said George F. Schild was the original and first inventor of the invention therein claimed, and
181 was and is the sole owner and holder of the said letters patent, and of all the rights, liberties, and privileges by them granted, and that the respondents herein, George E. Belknap, Joseph Feaster, C. C. Wolcott, and Jessie Dimond, had infringed upon the exclusive rights of the complainant under the same patent, that is to say, upon the first and fourth claims thereof, and which said interlocutory decree further ordered that the matter be referred to S. C. Houghton, esq., master in chancery of this court, to take, state, and report to this court an account of the caisson gates

made and used by the said respondents, which were an infringement upon the first and fourth claims of said letters patent, and of the damages suffered by the complainant by reason of such infringement, and the gains, profits, and advantages realized by the respondents by reason of said infringement since the 23d day of October, 1883.

And the said master having heretofore, to wit, on the 21st day of
182 October, 1890, filed his report in pursuance of the order contained in the said interlocutory decree, by which said report the said master finds that one caisson gate was made and used by the respondents, and that the gains, profits, and advantages which have arisen and accrued to them since the 23d day of October, 1883, from infringing the exclusive right of the complainant by the making and using of the improvement patented in the first and fourth claim of the said letters patent No. 287178, amount to $40,000, and that no damages in addition to said gains, profits, and advantages have been proven, and this court having on the 27th day of October, A. D. 1890, duly made and entered an order confirming the said report and ordered that a final decree be made and entered in accordance therewith, for the said sum of $40,000 and costs.

Now, therefore, it is ordered, adjudged, and decreed, and the court
183 doth hereby order, adjudge, and decree that the complainant, George F. Schild, do have and recover from the said respondents, George E. Belknap, Joseph Feaster, C. C. Wolcott, and Jessie Dimond, the sum of $40,000, with interest thereon at the rate of seven per cent per annum from the 27th day of October, 1890, and also for the further sum of $448.$\frac{55}{100}$, being the complainant's necessary and proper costs and disbursements in said cause.

(Signed) THOMAS P. HAWLEY,
U. S. Judge.

(Endorsed:) Filed and entered October 31, 1890. L. S. B. Sawyer, clerk.

184 *Memorandum of costs and disbursements on final hearing and acctg.*

United States of America, circuit court of the United States, ninth circuit, northern district of California.

GEORGE F. SCHILD, PLAINTIFF,
vs.
GEORGE E. BELKNAP ET ALS., DEFENDANT.

Disbursements.

Marshal's fees	$17.00
Clerk's fees	40.80
Witness' fees	
Master's fees for taking testimony on main case and acctg	155.50
Master's fees for report on accounting	200.00
Docket fee	20.00
Att'y's fees for taking depositions of Calvin Brown, C. C. Wolcott, Geo. F. & Schild on acctg., at $2.50 each	7.50
Att'y's fees for taking, on hearing of main case, the following depositions: Geo. F. Schild, C. C. Wolcott, Geo. W. Dickie, at $2.50 each	7.50
Affidavit	.25
Taxed at	448.55

L. S. B. SAWYER, *Clerk.*

UNITED STATES OF AMERICA,
Northern District of California, City and County of San Francisco, ss:

J. H. Miller, being duly sworn, deposes and says: That he is one of the attorneys for the complainant in the above entitled cause, and as such is better informed relative to the above costs and disbursements than the said complainant; that the items in the above memorandum contained are correct to the best of this deponent's knowledge and belief, and that the said disbursements have been necessarily incurred in the said cause.

J. H. MILLER.

Subscribed and sworn to before me this 30 day of October, A. D. 1890.

L. S. B. SAWYER,
Commissioner of U. S. Circuit Court, Northern District of California.

184½ To JNO. T. CAREY, Esq.,
Sol. for Respondent:

You will please take notice that on the 30 day of October, A. D. 1890, at the hour of 10.30 o'clock a. m., will apply to the clerk of said court to have the within memorandum of costs and disbursements taxed pursuant to the rule of said court, in such case made and provided.

JNO. L. BOONE,
LANGHORNE & MILLER,
Attorneys for Complainant.

Service of within memorandum of costs and disbursements and receipt of a copy thereof acknowledged this 20 day of Oct., A. D. 1890.

Attorney for .

(Endorsed:) No. 4161. U. S. circuit court, ninth circuit, district of California, George F. Schild, plaintiff, vs. George E. Belknap et al., defendants. Memorandum of costs and disbursements filed this 31st day of October, A. D. 1890. L. S. B Sawyer, clerk; by , deputy clerk. John L. Boone & J. H. Miller, attorney for complainant.

185 *Certificate to enrolled papers.*

Whereupon said pleadings, subpœna, copies of orders, decree, and a memorandum of taxed costs are hereto annexed, said final decree being duly signed, filed, and enrolled, pursuant to the practice of said circuit court.

Attest, etc.
[SEAL.]

L. S. B. SAWYER, *Clerk.*
By F. D. MONCKTON,
Deputy Clerk.

(Endorsed:) Enrolled papers. Filed Oct. 31, 1890. L. S. B. Sawyer, clerk. By F. D. Monckton, deputy clerk.

186 *Caption to depositions.*

In the circuit court of the United States for the ninth judicial circuit, in and for the northern district of California.

GEORGE F. SCHILD, COMPLAINANT,
vs.
GEORGE E. BELKNAP ET AL., RESPONDENTS. } In equity. No. 4161.

Be it remembered that on the 7th day of August, A. D. 1888, and on the several days thereafter to which the examination was regularly adjourned, as hereinafter set forth, at my office, room 57, in the United States appraiser's building, on the northeast corner of Washington and Sansome streets, in the city and county of San Francisco, State of California, before me, A. L. Coombs, special examiner in chancery, of the circuit of the United States for the ninth circuit and northern district of California, personally appeared the several witnesses whose names are hereinafter set forth, who were produced and examined on behalf of the respective parties to the above-entitled cause.

187 John L. Boone, esquire, appeared as counsel on behalf of complainants, and John T. Carey, U. S. atty., and M. A. Wheaton, esq., as counsel on behalf of respondent.

Following is a record of the proceedings:

Deposition of George F. Schild.

TUESDAY, *August 7th*, 1888.

Present: Mr. Boone, of counsel for complainant; Mr. Carey, U. S. attorney, and Mr. Wheaton, of counsel for respondents.

Examination in chief of George F. Schild, on behalf of complainant:

Q. 1. (By Mr. BOONE.) State your name, age, residence, and occupation, Mr. Schild.

A. My name is George F. Schild; my age, forty-five years; my place of residence, San Francisco; and I am by occupation a naval architect and draughtsman.

Mr. BOONE. We will now introduce in evidence United States letters patent No. 287178, issued to George F. Schild, the complainant herein, on the 23rd of October, 1883, for an improvement in caisson gates.

Q. 2. Mr. Schild, are you the party named in this patent as patentee?

A. Yes, sir; I am.

Question 3. Are you the inventor of the invention described in that patent?

188 A. I am.

Q. 4. Who is the owner of that patent?

A. I am.

Q. 5. Who has been the owner of it since it was issued?

A. I have.

Q. 6. Sole owner?

A. Sole owner.

(By consent of counsel for both complainant and respondent, a Patent Office copy of United States letters patent No. 287178 was substituted in place of the original letters patent for all the purposes of this suit,

and the original letter patent withdrawn. The Patent Office copy of the specifications and drawing of the same were marked "Complainant's Exhibit A.")

Mr. BOONE. I also introduce in evidence a model of a caisson gate constructed according to the design and the description contained in the letters patent Exhibit "A." (Marked "Complainant's Exhibit B.")

Q. 7. I will ask you, Mr. Schild, to state what that model Exhibit B represents?

A. This model represents the floating gate to close the entrance of a dock.

189 Q. 8. Now, take the letters patent Exhibit A, and describe by referring to the model the different parts as they are stated and laid down in that patent.

A. This upper part of the model Exhibit B I call the floating body.

Q. 9. By what letter is it represented in the patent?

A. "B." By means of which they deep keel "A" is floated. This floating body "B" has three decks, the upper one being marked in the patent "C," the second one "D," and the third one "E." Between the upper one and the second one there are, at each end, water tanks.

Q. 10. At each end of what?

A. At each end of the floating body, marked in the patent "F." Above the third deck "E," it has on each side openings marked "H," by means of which water can be let in and out. These openings are closed by sliding gates, which are marked "g" in the patent. In the deep keel plate "A" of the patent there on each side wicket gates, marked in the patent "G." These slide in guide frames "g," and are arranged to go up or down to uncover or cover the openings in the deep keel plate.

Q. 11. What is the object of the tanks "F?"

190 A. To properly balance the floating body "B."

Q. 12. Well, how do the tanks balance the body?

A. By letting the water in.

Q. 13. Now, Mr. Schild, describe the operation of that machine, how you used it in connection with a dock, and what its uses are.

A. If a caisson is in place and the dock empty, to lift the caisson I let water into the floating body, sufficient to overcome the buoyancy of the floating body.

Q. 14. That is when you get it in place?

A. No; it is in place. I say it is in place. The dock is empty, I say. I say in case the dock is empty I let, first, water in from the outside through the openings "H." Then after I get sufficient water in I close the gates or valves, then I open the wicket gates "GG," and the water runs into the dock through the wicket gates "GG." As soon as the water finds its level inside and outside of the dock the caisson will float. I will

191 state that if properly balanced it will float. If it don't float I let the water out of the water tanks "FF" and run down into the hold and open the gates "HH" and the water will flow out sufficiently to float the caisson.

Q. 15. Now, supposing a dock is full of water and you want to place a caisson in position across the entrance, how do you proceed?

A. I float the caisson into its place against the grooves of the dock.

Q. 16. (By Mr. CAREY.) Will it be without ballast then?

A. Well, I float it only in first, then I let water into the ballast tanks "F," and by doing this the gates "HH" are sufficiently submerged that the water can enter the hold, and the caisson will sink until the keel rests on the bottom of the dock and groove. Then I close the gates "HH" again, and commence to pump the water out of the dock.

Q. 17. (By Mr. BOONE.) Are you familiar with the state of the art, Mr. Schild, prior to the date of your invention of this machine?

A. Yes, sir.

Q. 18. State what it was. (No answer.)

192 Q. 19. Do you know what I mean by "the state of the art?"

A. To what part of science it belongs?

Q. 20. No, no; in what condition was the art of floating-gates prior to the date of this invention; were there floating-gates, and if so, what were they; describe them.

A. Yes, sir; the floating-gates used before were vessels consisting of a very deep body and comparatively low keel—shallow keel. To overcome the buoyancy of this deep vessel it was necessary to carry a great amount of ballast, according to the size, from two to four hundred tons. They had openings in the hull to let the water in and powerful pumps to pump the water out again to make them float.

Q. 21. Do you know the defendants in this case, Mr. George E. Belknap, Joseph Feaster, C. C. Walcott, and Jesse Dimond?

A. I know the gentlemen, except Belknap.

Q. 22. Do you know where they reside?

A. They reside in the Navy Yard, and Dimond, if he is there yet, at Vallejo.'

Q. 23. Do you know whether or not these defendants, or either of them, have used any caisson gate for a dry-dock, similar to the one represented in your patent?

193 A. No; I do not.

(Complainant introduces in evidence model representing the machine in use by the defendants, marked complainants Exhibit C.)

Q. 24. State, if you know, what Exhibit C is, Mr. Schild?

A. That is a correct model of the caisson used at the stone dry-dock at the navy yard at Mare Island, California.

Q. 25. Do you know what defendants have to do with the use of that machine? Have they anything to do with the use of that machine?

A. Yes, sir.

Q. 26. Whose control and charge is it in?

A. I believe it is in the control of the construction department of the navy yard at Mare Island, and under the direct supervision of Commodore Belknap as commandant of the navy yard at Mare Island.

Q. 27. Do you know what position Joseph Feaster holds at the navy yard at Mare Island?

A. He is assistant naval constructor in charge of the construction repairing department.

194 Q. 28. Has he anything to do with this caisson-gate?

A. I believe he is in charge of it at present.

Q. 29. What position does C. C. Walcott hold, if any, at Mare Island?

A. He is the civil engineer.

Q. 30. As such, or in any other capacity, has he anything to do with that gate up there?

A. The gate was built under his superintendency.

Q. 31. Do you know whether or not he has any control or management over that gate as an officer of the Government?

A. Not directly. Also, as the dock is not yet complete, he has charge of the building of the dock.

Q. 32. Do you know what position Jesse Dimond holds up there at Mare Island?

A. He was at that time in charge of the machinery working the pumps, and at the same time of the caisson.

Q. 33. (By Mr. CAREY.) "At that time," you say, what time was it?

A. Well, nearly two years ago.

Q. 34. (By Mr. BOONE.) Do you know whether or not that
195 gate has been in use at the dry dock at Mare Island?

A. I do know.

Q. 35. What use has it been put to?

A. For closing the entrance to the dock and keeping the water out of the dock so that the men can work inside the dock on ships or on the dock itself.

Q. 36. State whether or not, referring to the defendants' machine, it has a plate similar to the plate "A" referred to in your patent.

A. It has.

Mr. WHEATON. We will object to questions which are leading in their character, and to the last question in particular; and also to the witness stating his conclusion as to similarity of parts. I demand that the witness be required to give an original description of the parts and leave it for the court to decide whether they are similar or not.

Q. 37. State whether or not the bottom and ends of that plate in the defendants' machine is shaped like and adapted to fit the entrance of the dock.

A. It is.

Q. 38. State whether or not you find in the defendants' machine a floating body or vessel secured to the plate?

196 A. I do.

Q. 39. State whether or not you find in the defendants' machine water-tanks on each end of the body?

A. I do.

Q. 40. State whether or not those water-tanks have outlets above the surface of the water, in the defendants' machine?

Mr. WHEATON. The same objections to that question.

A. They have. They have outlets; the outlet is a pipe. There is no direct outlet to the outside in any case.

Q. 41. They have outlets, have they?

A. Yes, sir; they have outlets.

Q. 42. State whether or not the defendants' machine has suitable valve openings in the floating-body near the water line to admit water when the caisson is depressed?

A. Yes, sir; it has two valves in the bottom.

Q. 43. What difference do you find in the construction of the two caisson-gates; the models of which you find before you, Exhibits "B" and "C."

A. There is very little difference in the outside shape, or in the
197 general construction, except that the caisson in use at the navy yard has one deck less, and also that it has not the gates "H," and pumps the water out of the hull by means of a centrifugal pump.

Q. 44. Do you know who built the machine which is in use at Mare Island?

A. I do.

Q. 45. Who?

A. The Union Iron Works of San Francisco.

Q. 46. Do you know who furnished the plans for that machine, and after which that machine was built?

A. I do.

Q. 47. Go ahead and state who.

A. The Bureau of Yards and Docks in Washington, D. C.

Q. 48. Do you know who furnished those plans to the Bureau of Yards and Docks in Washington?

A. They were made, to my knowledge, under the superintendency of Civil Engineer Monicle.

Q. 49. Do you know where Monicle got his ideas from?

A. I think I know.

Q. 50 Well, state.

198 Mr. WHEATON. I object to that, upon the ground that he could not possibly know.

Mr. BOOME. I ask him, does he know?

Q. 51. Do you know where he got his ideas from?

A. I do know.

Q. 52. Go ahead and state it.

A. I had a model of a caisson of my invention in my office at the navy-yard at Mare Island, and Commodore Phelps, at that time commandant at the navy-yard, called the attention of Civil Engineers Monicle and Walcott to this model. By a conversation they had in regard to this model I am positive that Monicle never seen a model of a caisson of that kind.

Mr. WHEATON. The answer so far is objected to, and I move to strike it out on the ground that the witness has testified as to conclusions that he formed himself from a conversation he heard, and not stating what that conversation was.

The WITNESS. That follows afterwards. A few weeks after this conversation Civil Engineer Walcott begged me to get up a correct
199 set of plans of this new caisson of mine—to be used at the stone dock at the navy-yard at Mare Island, which was building at that time—to be forwarded to Washington for the approval of the Bureau of Yards and Docks.

Q. 53. Well, did you furnish such a drawing?

A. I did.

Q. 54. Did you give them any right or license to use this gate?

A. No, sir.

Cross-examination of George F. Schild:

Q. 1. (By Mr. WHEATON.) What inducements, if any, did you offer either to the Union Iron Works or to the officers of the United States Government if they would adopt your plans for building the caisson?

(Question objected to by complainant as immaterial and irrevalent.)

A. As there never had been built a caisson of this style, with such deep keel and other details, I was anxious that my plans should be adopted. I said that I would furnish them the plans, as I was anxious
200 that it should be built. I was to furnish the plans.

Q. 2. Did you also offer them a free right and license to use your inventions if they would put them into the caisson that they were about to build?

(The same objections by complainant.)

A. There never was made an agreement between the Navy Department or the Union Iron Works and myself, because when I made the first set of plans I didn't know if they would adopt them or not.

Q. 3. The question is whether you offered the officers of the United States a free right and license to use your plans if they would do so?

(The same objections by complainant.)

A. Well, you say my plans never were adopted. We never talked about them. There never was any talk about them being adopted, as my plans never were approved or adopted, to my knowledge.

Q. 4. I am not asking you whether an agreement was made, but whether you offered to the officers of the United States Government, and also to the Union Iron Works, that you would give them a free right and
201 license to use all of your inventions in the caisson that they were about to build if they would adopt your plans?

A. I never made any agreements, and I never made any offer to the Government, but I offered to the Union Iron Works that they could build after my plans if they would adopt the entire plan.

Q. 5. Why did they not accept your offer, if you know?

A. Because they told me that, although they thought my plans were better, they could not make any changes in the plans furnished by the Government.

Q. 6. Then, did they go on and build the caisson according to the plans furnished by the Government instead of adopting your plans?

A. They built according to the plans of the Government.

Q. 7. In the patent you have a large air chamber or space beneath the lower deck "E," that runs the entire or nearly the entire length of the caisson, have you not?

A. I have.

Q. 8. Is that air chamber in the caisson at Mare Island?

202 A. It is. Under any water-tight deck there is an air space. You see, for instance, in all our steamers we got ballast tanks, and if that is not filled with water that is an air space, helping to give the vessel buoyancy, isn't it?

Q. 9. How many decks has the caisson at Mare Island?

A. Two.

Q. 10. How many decks has yours, according to the patent?

A. Three. But I state in my patent that I can do with one or two.

Q. 11. Has the caisson at Mare Island any air chamber beneath its main water tank that runs the length of the caisson that corresponds in any way with the air chamber "e" in the patent?

A. Yes, sir.

Q, 12. Then why have you not put it on the model of that caisson, Exhibit C?

A. I have it in here. Here is the deck below here in Exhibit C, and also there is a deck here in Exhibit B, and if you read my patent carefully you will see that I don't insist on using three decks.
203 You can use two decks just as well. My patent don't say that I have to use three decks. I can just as well put my machinery right on top and dispense with a deck, and I believe it is so stated in the patent.

Q. 13. So they could dispense with every change that you made, could they not, in building caissons?

(Question objected to by complainant as immaterial and irrelevant.)

A. There have been caissons used before, and they are in use now, without this deep keel and without water tanks.

Q. 14. Now, those caissons that were in use before, did they float around on the water as yours would if one were made?

A. Certainly they float. They have to float.

Q. 15. Did they have water tanks into which water was let for ballast?

A. They have no water tanks. They let the water into the hold, or into part of the hold. The hold is mostly filled up with rocks and ballast.

Q. 16. Now, when they let the water into a part of the hold, what
204 is the reason that part of the hold into which the water was let is not a water tank?

A. We don't call, in naval architecture, any part of the vessel tanks except it is confined by bulkheads especially for that purpose.

Q. 17. In the caissons that were used before your invention, were there not parts of the caissons into which the water was let for ballast, and for sinking the caisson into place, and which confined the water to particular parts by means of bulkheads or partitions that were the equivalent of a bulkhead?

A. As a rule, not. There was an open—the water was let into the hold, and the water was not confined in separate water tanks, because it was not necessary, the caissons having so much ballast that they were always evenly balanced.

Q. 18. Was the water let into those caissons where the rock ballast was, and without being separated from the rocks?

A. In some instances the rocks might have been below a certain deck, and the water let in on this deck, but as a rule, I believe, and I
205 know the water runs right into the hold where the rocks are. They are not loose rocks, they are all cemented in. It is made level.

Q. 19. You are aware, are you not, that there was a floating caisson in public use at Baltimore before your invention?

A. I know it.

Q. 20. Did you ever see that one?

A. Not in Baltimore.

Q. 21. Do you know how it was constructed and built?

A. Yes, sir; I saw the plans and photographs.

Q. 22. Were there gates in that caisson which let the water flow from the outside of the caisson through the hull into the dry dock?

A. There were.

Q. 23. Were there gates for opening and closing those openings?

A. Well, you wouldn't call those gates; you would call those valves.

Q. 24. Were there devices there of some kind, either valves or gates, by which the water was let in or kept out of the dry dock by means of those gates and openings or not?

A. Yes, sir; there were.

206 Q. 25. Your patent does not seem to claim that very deep keel by itself as your invention, what is the reason of that?

Mr. BOONE. I object to that question, on the ground that it is immaterial and irrelevant; and further, that it is unintelligible, because a keel by itself could not be patented. It must be in combination with other things which make it operative, in order that it may become patentable.

A. I couldn't patent on a vessel or deep keel, because keels are made now on some vessels very deep; for instance, in fast-sailing yachts. But I patented this deep keel especially in a caisson, and, to my knowledge, never has a deep keel been used before in that connection.

Q. 26. Will you point out in your patent or in its claims any place where there is an assertion made that a deep keel, as applied to floating caissons generally, is your invention?

(Question objected to by complainant as immaterial, and on the
207 further ground that the patent itself is the best evidence.)

A. I stated in my patent that "the caisson gates which are generally used are boat-like floating structures, the keel and stems of which fit into grooves at the entrance of harbors and docks, and prevent the water from flowing either in or out. These caisson gates, built of either wood or iron, are very heavy and clumsy, requiring a great amount of stationary ballast to keep them in an upright position and pumps to operate them."

Q. 27. That merely states what was in the old caissons. I asked you to point out any language in which there is an assertion made that the deep keel shown in the patent, as applied generally to caissons, was your invention.

A. If you read carefully these lines you will see it. "These caisson gates are very heavy and clumsy." Why? Because they have not this deep keel. They have in place of this deep keel a body that had to be kept down by stationary ballast.

Q. 28. You keep constantly repeating what the patent says
208 about the old caisson.

A. Well, you asked me about that.

Q. 29. No; I asked you about the new one, and I asked you to show any place in the patent in which there was an assertion made that the deep keel shown in the patent, as applied generally to floating caissons, was your invention.

Mr. BOONE. I object to that question, on the ground that it is immaterial and irrelevant; that the patent does not purport to be a patent for a deep keel, or of a floating body with a deep keel separate and independent from other devices; and on the further ground that the claims of the patent show what is covered; that a deep keel by itself would not make a floating gate, as it requires other devices in connection with those two things in order to make a floating gate, and the patent as drawn and the invention as claimed covers a floating gate ready to be operated and worked without claiming parts which are not operated alone.

A. It might not speak directly of a deep keel, but I say that
209 "the object of my invention is to provide a floating gate or caisson gate, which will be light and easily handled, requiring no stationary ballast to lower it and keep it steady."

Q. 30. "And no pumps to raise it?"

A. In this object I have to do away with the deep hull and adopt a deep keel.

Q. 31. Now, we got away from the air chamber that I was trying to get explained before. The model of the patented caisson, Exhibit B, shows the air chamber at the bottom of the floating hull, while in the model of the caisson that was built, Exhibit C, that air chamber is not shown. Now, do you mean to say, notwithstanding this fact, that the caisson which was built actually had the air chamber, which is marked by the letter "e" in the patent?

A. I do. It has.

Q. 32. Why, then, was it not put on the model, Exhibit C?

A. Because I show only two decks in the model, Exhibit C, and show three decks in the model, Exhibit B.

Q. 33. Still, if the air chamber "e" is at the bottom of the cais-
210 son built at Mare Island why did you not put that air chamber on the model, Exhibit C, which you testify is a model of that caisson, no matter whether it had two decks or three?

A. I didn't show no decks on either of the models, or don't state that that is an air chamber, but only spoke about decks, and show the decks. I didn't give them any air chamber.

Q. 34. You have testified that the model, Exhibit B, is made after the plan described in your patent, haven't you?

A. Yes, sir.

Q. 35. The plan in the patent states that there is an air chamber in that place at the bottom of the floating hull, does it not?

A. Yes, sir; below the deck I called the space the air chamber. In every vessel there is an air chamber below decks, as long as it is not filled with water or used for cargo.

Q. 36. According to the patent that air chamber marked "e" always remains an air chamber while the caisson is in use, does it not?

A. It does.

211 Q. 37. For the purpose of making the caisson more buoyant?

A. Yes, sir.

Q. 38. That means that it is an air-tight chamber, does it not?

A. Yes, sir.

Q. 39. From which the air is excluded even when the water is below the air chamber, and also when it is above it in the tanks or hold?

A. Yes, sir.

Q. 40. Now, do you still insist that there is such an air chamber in the caisson at Mare Island, which is cased in and made air-tight, so that no water ever gets into it?

A. I don't want to say yes, and I don't want to say no. If you close the openings, certainly you have got this space, as I stated before. In deep sea-going vessels we get water-ballast tanks, and certainly if there is water in them they answer as tanks, and if there is no water in they are air chambers so long as the water don't enter there. The valves are

closed. This same thing is in this caisson used at Mare Island, and if they don't want to let any water get in no water will enter. They
212 can close the openings by means of which the water enters into the hold, and it becomes an air chamber for buoyancy purposes.

Q. 41. This air chamber "e" is in the patented caisson, is it not, when the hold of the patented caisson is filled with water, and it is sunk to its place with water ballast?

A. There is no water in the chamber.

Mr. WHEATON. Please read the last question to the witness.

(Q. 41 read.)

Q. 42. (By Mr. BOONE.) The idea is that when it is filled with water and sunk down that air chamber still exists?

A. Yes, sir; it still exists.

Q. 43. (By Mr. WHEATON.) Now, is there any such air chamber in the caisson at Mare Island that remains an air chamber while the hold of that caisson is filled with water, and the caisson is sunk to its place with water ballast?

A. Not directly. Also, there are instances where it will be sufficient to sink the caisson by water in balancing tanks.

Q. 44. Does the air chamber marked "e" in the patented cais-
213 son make the caisson a great deal more buoyant than it would be without it?

A. Well, that is an architectural question. Certainly it makes the caisson buoyant. I can put so much more weight in because the air-chamber is empty.

Q. 45. If everything else is equal, then, would it not require more water ballast to sink the patented caisson, which has that air chamber underneath its hold, than it would to sink the caisson at Mare Island, which has no air chamber underneath its hold?

(Question objected to by complainant as immaterial and irrelevant.)

A. Yes, sir; it would take a little more water or weight.

Q. 56. Has the caisson at Mare Island either valves or gates that will let the water in and out directly through the bottom of the hold?

A. It has gates to let the water in.

Q. 47. Are those gates upon both sides of the deep keel?

A. They are at each side of the deep keel?

Q. 48. When the caisson is empty what is to hinder its being floated around to the mouth of the dock and then sunk to its place with
214 water ballast by merely opening those bottom gates and letting the water flow into the hold of the caisson through them?

A. That is the way it is operated.

Q. 49. Then the caisson at Mare Island can be sunk to its position, can it not, without either pumping any water into it or letting any water flow into the tanks from one higher source than the body of water on which it is floating?

A. It can.

Q. 50. Can the patented caisson be sunk in this manner without either pumping the water into it or letting it flow into it from some higher source?

A. It can.

Q. 51. How?

A. By letting water into the air chamber, or into a part of the hull.

Q. 52. Please point out some method described in the patent by which water can be let into the air chamber.

A. The patent don't specify a valve or opening in the bottom of the hull, but certainly every shipbuilder would leave a valve in the
215 lowest part of the air chamber to let the water run out.

Q. 53. Does not the plan of the caisson described in the patent, both of its construction and of its operation, require that that air chamber marked "e" in the patent should be kept tight, remain an air chamber all of the while, and not have any water admitted to it at any time?

(Question objected to by complainant as immaterial and irrelevant.)

A. As you ask me if I could sink my caisson by means except through water at a higher level, I stated I could let water in the air chamber, but that I wouldn't do it.

Q. 54. (By Mr. BOONE.) Simply because it would be a poor way of doing it?

A. Certainly. I would have to let the water in and out again afterwards. That is the whole thing.

Q. 55. (By Mr. WHEATON.) Now, suppose that a caisson is built with that air chamber "e" just as described in the patent, and without any openings or outlets other than those described in the patent, could
216 that caisson be sunk to its position with water ballast without placing the water ballast in the caisson, either by a pump or letting it flow from some higher source, or some other artificial means other than letting it flow into the caisson from the body of water on which the caisson was floating?

A. I don't cover such a design by my patent. Also, I can do it by different means.

Q. 56. Will you please answer the question directly, and state whether a caisson constructed just as described in your patent, with exactly the same number and location of openings, and none other, could be made to sink to its position by letting water flow into it from the body of water on which it was floating.

A. It could not.

Q. 57. Then so far as the operation of the caisson at Mare Island being sunk to its place after it is floated to the mouth of the dock is concerned, the devices described in your patent are not used, are they?

A. No, sir.

(Q. 57 repeated.)

217 Q. 58. (By Mr. BOONE.) Do you understand that question? I want to know if you understand that question first.

Mr. BOONE. Just read the question over to him again, Mr. Examiner, and see if the witness understands it.

(Q. 57 read.)

A. I say, no; not in sinking, but the ballasting tanks are made use of that the caisson may sink gradually and on an even keel into its place.

Q. 59. (By Mr. WHEATON.) After the caissons are sunk to their place at the mouth of the docks, the practice is to pump the water out of the docks, is it not?

A. It is.

Q. 60. Then after the caisson at Mare Island has been sunk to its place at the mouth of the dock, and the water pumped out of the dock, what is to hinder the opening of the gate in the bottom if the caisson, which is on the side of the keel next to the dock, and letting the water flow out of the caisson into the dock so as to leave the caisson emptied of its water ballast without the use of any pump whatever?

(Question objected to by complainant as irrelevant and immaterial.)

218 A. No reason whatever.

Q. 61. Then in the case of the caisson at Mare Island, if they sank the caisson by letting the water-ballast into it through the gate in its bottom, and if they also emptied it by letting the water flow out of the same gate into the dock after the dock is emptied, and if there are no such gates in the patented caisson, can you claim that there is in use in the caisson at Mare Island any of your devices for either charging the caisson with water-ballast and sinking it, or for discharging the cassion of its water-ballast and allowing it again to float.

Mr. BOONE. That question is objected to as incompetent, as the object aimed at by counsel is entirely irrelevant to the issue, and that it can not figure as to whether or not the defendants have infringed upon the claims of the patent.

A. I say the defendants use some of my patented devices

Q. 62. (By Mr. BOONE.) Is that all, some of them?

A. They use in sinking . . . . they sink the caisson, and

219 they charge the caisson, but they have to make use of my water-tanks, which I call ballasting-tanks, at the ends of the floating body.

Q. 63. (By Mr. WHEATON.) Mr. Schild, who made these two models, Exhibits D and C?

A. They were made in Vallejo.

Q. 64. Under whose supervision and direction?

A. Under my supervision and direction.

Q. 65. Why did you not leave them open at some place so that they would show that one had two desks and the other three?

(Question objected to by complainant as immaterial and irrelevant.)

A. I didn't do it, because in my patent I say that I can use either two or three decks, and I thought it was immaterial, and by cutting a hole in the sides it would prevent the floating. You see these models are made really so that you can use them. They are actual models.

Q. 66. How many gates are there at Mare Island through the keel for permitting water to flow into the dock?

220 A. I believe there are eight on each side.

Q. 67. Now, your patent shows five such openings, with double gates for them, does it not?

A. It does.

Q. 68. Then, why did you make the model which represents your patent with eight of those openings instead of five?

A. When I had the models made I had only one plan of the keel plate and of the arrangement of the gates; and as I didn't patent a certain number of these gates I think I can put as many in as I please.

Q. 69. Well, why did you please to make that number in the model just eight?

(Question objected to by complainant as immaterial.)

A. Because the caisson at Mare Island, I believe, has eight—I am not sure. I believe it has ten, but I don't know. There is a big open space in the keel plate in the center.

Q. 70. In fig. 13 of the patent are shown the ratchets and wheel by which the gates, "G," are opened and closed at one and the same
221 time. Does your model show those devices?

A. No.

Q. 71. Why did you not put them in if you were making a model of your patented caisson?

A. It would have been very expensive to show the operation on such a small scale.

Q. 72. In fig. 9 is shown the gate "r," and the devices by which it is operated. Is that portion of your invention shown in the model, Exhibit B?

A. It is not.

Q. 73. Why not?

A. For the same reasons as I gave before.

Q. 74. In fig. 5, as well as in the specifications of your patent, is described the ballasting-tank, "F," with its outlet, "f," above the second deck, "D." Does your model correctly represent that tank, "F," with its outlet, "f," in the position as shown in the drawing of the patent?

A. It does. I know I made a separate part, but the drawing shows what I didn't show on the model—they are in the specifications.

Q. 75. Has the caisson at Mare Island any balancing-tank in
222 which the bottom is at a different elevation from the bottom of its hold?

A. It has.

Q. 76. Where does the water flow out of the balancing-tanks in the caisson at Mare Island?

A. I expect in the lowest part of the tank; but as I never have been on board of her I can't state it positively, but I expect on the lowest part.

Q. 77. You don't know, of your own knowledge, then, how it is, do you?

A. There must be an opening to let the water out.

Q. 78. Do you know, of your own personal knowledge, where those openings are, and what they open into?

A. No.

Reexamination of George F. Schild:

Q. 1. (By Mr. BOONE.) Mr. Schild, you stated in your cross-examination that you offered the Union Iron Works that they might build according to your plan—that they would use your entire plans; what did you mean by building according to your plan?

223 A. The Union Iron Works didn't build according to the plans.

Q. 2. (Interrupting.) Well, they built that machine at Mare Island, didn't they.

A. Yes, sir.

Q. 3. Well, that is built according to your plans, isn't it?

(Question objected to by respondents as leading.)

A. It is not.

Q. 4. Well, we might as well dismiss this suit, then.

Mr. WHEATON. Did you get that remark in, Mr. Examiner?

Mr. BOONE. That is only a side remark; you don't want that in.

Mr. WHEATON. Well, I insist that that go in. Anything said to the witness ought to go in to show the connection.

The WITNESS. Well, what do you mean by "plans"? You have got my plans in your office, haven't you, Mr. Boone? The Union Iron Works didn't have those plans.

Q. 5. Well, state what you mean by your plans.

A. They didn't build after the plans I prepared and Civil
224 Engineer Walcott sent to Washington for approval, but they built after the plan the Bureau in Washington sent to the navy-yard at Mare Island.

Q. 6. Then, when you refer to your plans, when you use the words "my plans," you don't refer to your invention, do you?

(Question objected to by respondents as leading.)

A. Sometimes I might and sometimes not.

Q. 7. Do you in this instance refer to your plans—in your offer to the Union Iron Works?

A. I refer only to the drawings.

Q. 8. What was the difference at that time between your plans and the plans that they were using?

A. The keel was made a little deeper, the bottom less slanting, in the plans they were using, and also the plans show valves in the bottom of the floating body.

Q. 9. Is that all the difference between the two plans?

A. Also, there is one deck less, besides the arrangement for raising the wicket gates and lowering the same are different.

225 Q. 10. What was your object in desiring to have the plans changed according to your plans?

A. So that they would take in every part of my patent.

Q. 11. Did they recognize you at that time as being the inventor of this caisson?

Mr. WHEATON. I object to that question as calling for a conclusion of the witness, not stating the fact.

A. I expect they did, because the Union Iron Works sent Mr. Wheaton up to Vallejo to make some offers to give the Union Iron Works the permission to build it.

Q. 12. (By Mr. WHEATON.) Do you know that of your own knowledge or were you only told so?

A. Well, I believe I have got some written letters. You wrote me some letters where you stated——

Q. 13. (Interrupting.) Do you know, of your own personal knowledge, what took place between the Union Iron Works and myself?

A. No.

Mr. WHEATON. Then I object to the witness undertaking to state it, and I move to strike out all he has said in regard to it.

226 Q. 14. (By Mr. BOONE.) Did Mr. Wheaton represent to you at that time that he had come from any person; that any person had sent him to you?

A. Yes, sir.

Q. 15. Who did he represent to you had sent him to you?

A. The managers of the Union Iron Works, of San Francisco.

Q. 16. Did he make any attempt to negotiate with you?

A. He did.

Q. 17. In whose interest?

A. In the Union Iron Works' interest.

Q. 18. Now, what was your proposition to the Union Iron Works?

A. My proposition to the Union Iron Works was either to adopt my patent caisson entirely, or pay me three thousand dollars royalty if they followed the plans sent and prepared by the Bureau of Yards and Docks.

Q. 19. Did they accept your proposition?

A. They did not.

Q. 20. What is the object of the air chamber in your caisson gate?

A. The deck, forming with the bottom and sides the chamber,
227 is a few inches——

Q. 21. (Interrupting.) What is the object? What purpose does it perform in the vessel?

A. To float a vessel.

Q. 22. Well, wouldn't a vessel float without an air chamber?

A. It would.

Q. 23. Then, what is the special object of that air chamber in that vessel?

A. To prevent water flowing into the hold. You get me there, for you see I don't know what you mean by it.

Q. 24. What is the object of any air chamber in a vessel?

A. To make a vessel bouyant.

Q. 25. Then what is the object of the air chamber in your caisson?

A. To make it bouyant.

Q. 26. Do you find anything in the defendant's machine to serve the same purpose, which makes it bouyant?

A. I do.

Q. 27. Well, what do you find there? What is it that is the equivalent of your air chamber in the defendant's vessel?

A. I find a deck.

228 Q. 28. Well, now, just describe how that deck serves as the equivalent of your air chamber?

A. The caisson at the navy-yard at Mare Island can never sink, as there is no water let into the hold.

Q. 29. No ves el would sink as long as there is no water let into the hold, would it?

A. Well, then, unless water is let into this air chamber. They don't call it "air chamber," and so I wouldn't call it.

Q. 30. Now, you describe to us what there is in the defendant's machine that serves as an equivalent, and how it serves as an air chamber in the defendant's machine; just describes it.

A. You stick to that air-chamber business.

Q. 31. Well, you put it in your patent, and I have got to stick to it. I want you to state what you find in the defendant's that serves the same purpose as your air chamber. Do you find in the defendant's machine anything that serves the purpose of your air chamber?

A. No, sir; I find a pump.

229 Q. 32. Do you understand the question? I asked you whether you find in the defendant's machine anything which serves the purpose of the air chamber that is in your caisson gate?

A. I say, no.

Q. 33. Do you understand the question? You say the object of the air chamber in your machine is to produce buoyancy. Now, is it necessary to produce buoyancy in the machine?

Mr. WHEATON. I object to that question, on the ground that the witness has testified that the object of the air chamber was to produce more buoyancy than the body of the vessel would have without the air chamber.

A. No, not in one sense.

Q. 34. Then what is the use of the air chamber?

A. My air chamber in the patent is for the purpose of raising the caisson without any pump.

Q. 35. Do the defendants raise their caisson gate without any pumps?

A. No; they use a pump.

Q. 36. Then, in that case, what do you find in the defendant's machine that serves the equivalent purpose of the air chamber in your machine?

230 A. I find a centrifugal pump.

Q. 37. (By Mr. WHEATON.) That centrifugal pump is an immense large pump they use for emptying the dry dock, isn't it?

A. No, sir; that pump is on the second deck of the caisson.

Q. 38. And used to pump the water out of it, is it?

A. Yes, sir.

Q. 39. What is it driven by?

A. By steam.

Q. 40. By a steam-engine?

A. No; by steam furnished from a boiler on shore.

(It is admitted by both complainant and respondents that the two models, Exhibits B and C, are the identical two models which were used in the trial of the case of George F. Schild against the Union Iron Works, by jury, in this court, some two years ago.

Complainant introduces in evidence duly certified copy of the judgment in the case of George F. Schild *vs.* The Union Iron Works, marked Complainant's Exhibit D.

Complainant rests.

231 *Deposition of Christopher C. Wolcott.*

TUESDAY, *August* 21, 1888.

Present: Mr. Boone, of counsel for complainant; Mr. Carey, United States attorney, and Mr. Wheaton, of counsel for respondents.

Examination-in-chief of Christopher C. Wolcott, on behalf of respondents.

Q. 1. (By Mr. WHEATON.) State your name, age, place of residence, and occupation.

A. My name is Christopher C. Wolcott; my age, forty years; my place of residence, the navy yard at Mare Island, California; my occupation, civil engineer in the United States Navy.

Q. 2. Please look at this patent, which I now show you, Complainant's Exhibit A, and state whether you understand it, and the caisson-gate therein described.

A. (After examining the patent.) I think I do, sir.

(Respondents introduce in evidence a model of a caisson gate made substantially as described in the patent, Exhibit A, marked Respondent's Exhibit 1.)

232 Q. 3. By whom, if you know, was this model, Exhibit 1, made?

A. It was made at the navy yard at Mare Island by the workmen there under the superintendencyo f George F. Schild, the complainant herein, and myself.

Q. 4. At whose instigation was it built?

A. My own, with the authority from the Navy Department.

Q. 5. What did Mr. Schild have to do with the construction of this model, Exhibit 1?

A. He explained the plans to the workmen who made it.

Q. 6. When was it made?

A. It was made in 1882, during 1882 or 1883. I think it was made in the latter part of 1882, or perhaps early in 1883.

Q. 7. What was it made for?

A. It was made to exhibit a proposed gate that he wished submitted to the Navy Department, for the use of the new stone dry dock at the navy yard at Mare Island.

Q. 8. Whom do you mean by he?

A. George F. Schild.

Q. 9. What was done with the model, Exhibit 1, after it was first constructed?

233 A. It was sent on to the Bureau of Yards and Docks, Navy Department, Washington, D. C.

Q. 10. Was that before or after the caisson was built which is now in use at the Mare Island navy yard?

A. Before.

Q. 11. At that time had the Navy Department adopted the plan that they would follow in constructing the caisson gate for Mare Island?

A. Not to my knowledge.

Q. 12. Do you know what the Department did, what action it took with reference to adopting or rejecting the plans shown by this model, Exhibit 1?

A. They did not take any action at all; they simply ignored it and presented plans of their own.

Q. 13. How does this model, Exhibit 1, compare with the description of the caisson in the patent, Exhibit A?

Mr. BOONE. I object to the question as incompetent, irrelevant, and immaterial, no proper foundation having been laid for showing this witness to be qualified to pass upon that proposition.

234 A. The model, Exhibit 1, conforms substantially to the description in the patent, Exhibit A, except in the matter of operating the gate "H." The mechanism shown in the patent is not shown on the model, Exhibit 1, for opening the gate "H," as is described in the patent; also, the number of gates are not shown in the model, Exhibit 1, as are exhibited in the patent, Exhibit A.

Q. 14. Which gates do you mean?

A. The gates for filling the dock which are designated by the letter "G" in the patent. Only two are shown in the model, Exhibit 1, and the patent shows six. There is only one gate "H" shown on either side in the model, Exhibit 1, while two on each side are shown in the patent, Exhibit A. The mechanism for operating the gates "G" in the patent is shown on the model on top of the upper deck, whereas in the patent it is placed on the between-decks. In the model there are two decks shown and in the patent there are three; and then the general form of construction is not carried out at all in the model as shown in the patent; that is to say, the framing of the metals and all that.

235 Q. 15. How does the general shape of the model with the deep keel, without regard to the details of how the different parts are put together, compare with the patent?

A. The general shape is the same; that is to say, there is a deep keel and floating body to operate it.

Q. 16. Do you find in the model, Exhibit 1, the air-chamber provided for in the patent, Exhibit A?

A. Yes, sir. The absence of the between-decks in the model makes it difficult to point out or to locate the position exactly of this air chamber, but there is an air chamber there between the lower deck and the bottom of the floating body in the model as is shown in the patent.

Q. 17. In the model, Exhibit 1, and in the patent, Exhibit A, does that air chamber constitute the body of the floating body?

A. An air chamber is situated between the bottom and the lower deck as shown in the patent, and in the model, Exhibit 1, it is situated between the bottom and the lower deck as shown in the patent.

236 There is no between-decks, however, in the model, Exhibit 1, which is shown in the patent.

Q. 18. What is there in the patent Exhibit A, or in the model, Exhibit 1, that forms the bottom of the floating body below the air chamber, if anything?

A. There is nothing between the air chamber and the bottom of the floating body at all.

Q. 19. That is, the bottom of the air chamber is the bottom of the floating body?

A. Yes, sir.

Q. 20. In the model Exhibit 1 do you find the balancing water-tanks in each end substantially as called for in the patent Exhibit A?

A. Yes, sir.

Q. 21. As described in the patent Exhibit A what would be the method of operating a caisson constructed as therein described?

(Question objected to by complainant, on the ground that it is incompetent, the patent itself being the best evidence.)

A. We will accept two conditions; first, the dock empty and the caisson in place, and you wish to fill the dock. The first case: The gates which are marked in the patent G G are opened by means of the

237 mechanism shown in the patent, by sliding one gate up and the other gate down. That allows the water to flow through the floating-keel into the dock to equalize the height of the water on both sides. This operation continues, depending upon opening a number of the gates,

and only partially depending on how fast you want to fill it. This operation continues until the water commences to rise up to the bottom of the floating part of the caisson. The gates H H are partially open, depending upon circumstances how far this opening shall be.

Q. 22. The gates H H are open on which side?

A. On either side. You open the gates H H preferably on the inside of the dock to allow the water to flow on to this balancing deck to hold the caisson in place as the water rises up and gives it flotation. This operation is to prevent sudden jumping of the caisson when the lifting-power of the caisson, due to the level of the water inside and outside being equal, which has a tendency to jump the masonry out of place, or
238 to strip the gasket off the edges of the caisson where they bear against the dock. The amount of water to be let in through these gates H H is a matter of judgment for the person operating it. When he thinks there is sufficient water on this balancing deck to control the action of the caisson he closes the gates H H. When the level of the water has arisen so that the inside and outside are equal, the caisson would be slightly removed from the shoulder. Then, or any time prior to that time, water would be placed in the two balancing tanks at either end of the floating body. To lift the caisson, which has now sunk, and which it is impossible to move, we would open the valves designated in the patent Exhibit A by the letter "f," by means of the handle K, which is shown in the model at either end—you open them and allow the water from these balancing tanks to flow onto the ballast-deck, and at the same time open the gates H H to allow the water to flow out from the ballast-deck, either inside or outside the dock, it is immaterial which. As the water leaves
239 these balancing tanks the ballast is removed by the act of flotation, and the water flows out through these openings until the caisson rises up to her mean load line. She is then swung out of place by hand, or by some mechanism, and the ship is placed in the dock.

Q. 23. When the caisson is floating naturally in the water, is the gate "H" in the inside above or below the surface of the water, when there is no ballast on it?

A. Properly constructed it should float three or four inches above that. That depends on the pleasure of the operator.

Q. 24. When does the operator add his ballast?

A. He would add it all together in his ballasting tanks at either end of the floating body.

Q. 25. What is the action of the air chamber in using a caisson as you have described?

A. It acts as a buoyant power to the caisson to free it of its load, which makes it automatic.

Q. 26. Is it because of the buoyancy that is furnished by the air
240 chamber that the gate is raised above the surface of the water, or not?

(Question objected to by complainant as leading.)

A. Partially so; yes. It is the emptying of the balancing tanks at either end, together with the air chamber, that serves to lift the gate H above the level of the water.

Q. 27. Presuming that the caisson would operate as described in the patent, state whether or not when the caisson is sunk and the ballasting

tanks loaded and also the ballast-deck, the ballast all being water, state whether or not if the gates "f f," and also the gates H H, were left open, the ballasting water would flow out automatically and keep flowing until the caisson would rise automatically and float.

A. Yes, providing the supply of water which was put into the balancing-tanks from the outside, or what Mr. Schild terms extraneous means of supplying water, was cut off, so that the supply in these balancing-tanks should be less than that passing out through the valve "f."

241 Q. 28. You spoke of the gasket being destroyed by the jumping of the caisson. Please explain more fully what the gasket is?

A. The gasket is in this case a strip of rubber placed entirely around the outer edge of the floating-body keel, from upper deck around to upper deck, to serve as a packing to the caisson against the shoulders of the dock, to make it a water tight joint.

Q. 29. Now please go on and describe the second case that you have suggested.

A. The second case is when the dock is full and you wish to empty the dock, the caisson being floated away from the entrance. The caisson is floated and placed in position by any desirable means, entirely absent from the patent. Water from extraneous sources is placed in the two balancing tanks through openings in the upper deck and allowed to flow there until the caisson from the condition of its ballast is sunk low enough to bring the gates H H on either or both sides down to the level of the water, allowing the water to flow in through these gates onto the balancing deck. The water supply to the balancing-

242 tanks at either end is then cut off. The water ballast then flows on continuously through these openings H H until the bottom of the floating keel rests upon the bottom of the opening to the dock. The gates H H then are closed, and the top of the caisson is generally held in place by means of hawsers until the pumps are started. All the openings through the bottom of the keel are, of course, closed and the mouth of the dock is sealed with this caisson. The pumps to remove the water from the dock are started, and the pressure due to the difference of level of the water inside and out forces the caisson securely against the shoulders of the dock, making a very water-tight joint. All the water is removed from the dock, and in the operation of removing this water the gates H H on the inside of the dock are opened to allow the water to flow out from the ballast deck, and also the valve "f," is opened to allow the water to drain from the balancing-tanks. This condition of affairs is usually taken to paint and clean these ballasting-tanks and the

243 portion of the caisson inside the dock.

Q. 30. What is the object of letting the water out of the caisson while it is in place when the dock is empty?

A. For the purpose of cleaning and prevent rusting only. When the water is all removed from the dock the excessive pressure from the outside will prevent any movement due to the flotation of only one-half of the caisson, and the keeping of water in there will tend to rust it and injure it, through its weight and detrition, due to its chemical qualities.

Q. 31. What is the height of the water which furnishes that water to the outside of the caisson when the water is all poured out of the dock on the inside?

A. At high tide it is thirty-one feet and six inches over the sill, and at the bottom of the dock it is four feet and six inches lower than the bottom of the caisson, which rests upon the invert or sill.

Q. 32. In that case is there any flotation or lifting power to the water which would tend to lift the caisson, except that on the outside?

244 A. None at all; the dock is entirely empty. There is nothing but water on the outside, and the pressure of that water against the caisson and the gate at the opening is seven hundred and sixty-four tons, and the lifting of the weight of the caisson, or displacement, is only one hundred and forty tons, and half of that, of course, would only be seventy tons.

Q. 33. Does that create a great friction between the caisson and the shoulders of the dry dock, which would tend to prevent the caisson from raising?

A. Oh, it is enormous; it would tear it to pieces before it would raise.

Q. 34. Without regard to that friction, would the flotation or lifting power of the water on the outside of the caisson be sufficient to lift it when it was empty, if there was no ballast in it?

A. I doubt it. It might, however, with that increased draft it has, tend to raise it some, but still it would be apt to capsize it. It certainly would capsize it.

Q. 35. How intimately are you acquainted with the construction and operation of the caisson which is in use at the dry dock which is in

245 use at Mare Island; I refer to the same one that was built by the Union Iron Works of this city?

A. I am intimately acquainted with it. I was inspector for the Government when it was built, and I tested it when it was delivered, and have operated it since.

Q. 36. Please state how that caisson operated at Mare Island in the two cases mentioned; commencing as you did in this case when the caisson is in place and the dock empty.

A. There are eight sliding gates in the caisson at Mare Island, through the deep keel. Each gate worked independently by means of a screw. At the end of the screw a large key-wrench is applied, and men walking around on the betweendecks raise this gate by means of this screw, one on either side at a time. The water pours through these openings thus exposed until the water reaches the bottom of the flat floating-body. The caisson at Mare Island has two openings in the flat bottom of the floating-body situated near the deep keel. These openings are fitted with pipe which lead to two gates or valves situated on either side, and inside

246 of the floating-body. By opening these valves the water, when it reaches the level of the floating body on the inside, flows up through this pipe, through the valve, and through the discharge into the bottom of the floating body, until a sufficient quantity has been allowed to enter which will hold it properly in place while the water rises on the inside of the dock, and to prevent jumping, as in the previous case, due to the flotation of the water rising up inside of the dock as the dock is being filled. When this amount of water has been admitted which is deemed sufficient, these valves are closed, cutting off this opening in the bottom, and the water is allowed to pour into the dock until the level inside and outside is the same. The upper part of the caisson is then pulled away slightly from

the shoulders of the dock, and the pump, which is situated on the between-decks of the caisson—it is a centrifugal pump driven by an engine, the steam being supplied by means of a horse connecting with a pipe on the upper deck of the caisson to steam pipes along the coping of the dock.

247 These steam pipes conduct the steam from the upper deck down to the betweendecks to the engine. This engine is started, and this centrifugal pump draws the water from the bottom of the floating body and discharges it either overboard outside the dock or inside the dock, depending upon the position in which the caisson is placed in the dock, as there is only one discharge opening from this pump. When this water is discharged, which has served as ballast to hold it down, the caisson rises until it either is entirely free from water, or until the ballast is all removed, or sufficiently removed to handle the caisson with ease, and it is then floated out of place, and the ship, or whatever it is, is admitted into the dock.

In the second case the eight gates on each side of the keel are closed in the converse manner to which they are opened. The caisson is floated around into the place at the entrance of the dock, and the valves through the bottom, as described in the first condition, are opened and the water

248 allowed to flow into the bottom of the floating body until it sinks into its place. The pumps are then started and the caisson seals itself, or is sealed by the pressure of the water on the outside, and the pump is then started again and the water is pumped either entirely or partially out of the bottom of this caisson.

Q. 37. You say the "pumps" are started; what pumps do you mean?

A. There are pumps to pump the dock out which are started to seal the caisson against the shoulders of the dock.

Q. 38. Does that result entirely from pumping the water entirely out of the dock and leaving the pressure on the outside of the caisson?

A. Yes; it seals it up. The pump inside the caisson on the between-decks is usually started up very soon after the pumps on the dock are started, and this water, which is in the ballast space in the bottom of the caisson, is pumped out and discharged by means of this pump inside the caisson.

Q. 39. What is to hinder opening the gates in the bottom of the caisson and let the water flow out into the dock after the water has been lowered inside the dock?

249 A. Nothing at all, except usually we do not wish to strain the caisson by carrying that weight of water unsupported. After the water leaves this floating body, after the water-line in the dock descends below the water-line of the ballast in the bottom of the caisson, we can then open the valve in the bottom and allow the water in the caisson to descend with the water in the dock.

Q. 40. Do you ever operate it that way?

A. We never have operated it that way. Our pumps are new and we have always used the pumps. I have used them also when the dock was empty to wash out there, and I have carried water into the ballast space in the bottom of the floating body to wash out the mud and then afterward allowed it to run into the dock. There is no reason why it should not be allowed to run out, but there is a point at which it won't run any further. The discharge from these two openings in the bottom of the caisson into

the interior of the ballast space is some six or eight inches above the bottom, and consequently all the water would not run out of the caisson
250 even if they were left open into the dock; but the pump in the caisson has its suction-pipe, which reaches down into a sump which is placed below the bottom of the floating body, sufficiently deep to allow all the water in the bottom of the ballast space to be drained into this sump, and is afterwards pumped out so that you get the bottom dry.

Q. 41. What are the two occasions in which water-ballast is used in the caisson at Mare Island?

A. Used in opening and closing the dock. You can not use the caisson without it.

Q. 42. Is there any water-ballast used while it remains in position in the dock when the dock is empty?

A. It is not necessary. It has been. I don't operate the caisson now, so I can not say. It has been turned over to another department. It is not necessary absolutely.

Q. 43. What is the ordinary practice?

A. Well, it has been used, and it has not been used. It is not used now, because they are cleaning the bottom of the caisson and painting it inside.

Q. 44. Please explain a little more fully why it is necessary
251 to have the water-ballast in the caisson and hold it down while the dock is being filled with water, instead of leaving the water-ballast out and letting it rise and float away as the water in the dock rises high enough to float it?

A. The water on the outside at the time of using the dock is generally twenty-six to thirty feet deep, and on the inside there is nothing except the air—the dock is empty. As the water risses up it will rise up for some seventeen or eighteen feet of the deep keel before it reaches the floating body. There is then a difference of pressure due to the difference of levels of the two heights of water inside and out of probably ten feet. As the water commences rising upon the floating body of the caisson, for every inch of immersion of the floating body gives it a displacement or lifting power of over four tons on every inch of vertical distance, and consequently there is a force which is constantly being increased while the pres'ure to hold it in place is being diminished, and very soon the point will be reached where these two forces are equal, and the force inside
252 will then increase so rapidly that it will jump the caisson while there is still a pressure due to eight, ten, or perhaps twelve or fourteen inches of water difference in level between the water inside and out. This creates a very great pressure of the caisson against the shoulders of the dock, and is apt to, and will unquestionably, not only strip the rubber gasket or packing around the edges of the caisson, but will lift some of the upper courses of masonry of the dock out of place, as well as permitting a great inrush of water around the sides of this caisson, which would be very apt to disturb the ship or vessels inside there, and perhaps damage them by forcing them against the sides or head of the dock.

Q. 45. State whether or not the practice is to set the caisson at Mare Island automatically, by simply opening the gates through the bottom?

A. Always.

Q. 46. Please state whether or not a caisson constructed according to the patent, Exhibit A, could be sunk automatically by opening any gates in it anywheres?

A. No, sir.

253 Q. 47. Please state whether or not the caisson at Mare Island can be raised automatically by opening any of the gates in it or otherwise after the dock is filled with water, and the caisson still contains its full amount of water-ballast which was used to hold it down.

A. No, sir.

Q. 48. Please state whether a caisson constructed as described in the patent, Exhibit A, could be raised automatically by opening the valves in it when the dock is filled with water and the caisson contains its full amount of water-ballast.

A. Yes, sir.

Q. 49. To what are these differences in the operations of sinking and raising the two different caissons due?

A. Well, an air chamber placed in the bottom of the caisson is shown in the patent, and from its absence will not operate the caisson, used at Mare Island.

Q. 50. To what extent, if any, does the location of the openings, "H," above the water-line contribute to the automatic raising of the caisson?

254 A. They are very valuable. By the proper placing of those you either could or could not raise and sink it. You could not sink it if they were placed too high, and you could not raise it if they were placed too low. There are certain relations with reference to the position of the balancing-tanks inside the caisson and the lower part of the openings of the gates, "H," with reference to their height above the water-line. This line of flotation would have to be observed in order to make it operate. They are mutually one dependent upon the other.

Q. 50½. Are there any water-ballast tanks in the caisson used at Mare Island at each end?

A. There are.

Q. 51. How are they used in practice?

A. They have not been used in practice except as a matter of test—except to see that they were tight, and to see how they would operate. They are placed at either end by means of a bulkhead, which extends across from the upper-deck to the between-decks, the between-decks itself forming the bottom of the ballast-tank. They are simply put there

255 in case of any accident, by means of which, when the water was being pumped out of the ballast space in the bottom of the caisson, one end should be caught and held down, then, by adding water to the other end, it would tend to increase the flotation of the whole body by submerging it and thus create a force to free it.

Q. 52. How many times has the caisson been used at Mare Island; that is, how many different times has it been put in place and the dock emptied?

A. It has been taken out and put in six times since the dock was opened.

Q. 53. How many of those times have you used the balancing-tanks in the end of the caisson, either to assist in sinking the caisson or to assist in raising it?

A. We never used them for that purpose at all.

Q. 54. What is the relative position between the bottom of the balancing-tanks in the caisson at Mare Island and the bottom of the main ballast-hold?

A. It is just above it. It is on the deck just above. It is placed there so as to let the water in the ballasting-tanks drain out into the
256 hold, so we would not have to pump the water out of the balancing-tanks.

Q. 55. So far as raising the caisson which is described in the patent automatically in the manner therein described, is it absolutely necessary to use the balancing tanks at each end of the caisson, or not?

A. Yes; without them it would not operate.

Q. 56. Is there any way described in the patent, Exhibit A, of making a caisson commence to rise except by letting the water flow out from these balancing tanks at each end?

A. No.

Q. 57. Now, is there any such operation as that in the caisson used at Mare Island?

A. No; the water has to be pumped out of the caisson before it will rise, at Mare Island?

Q. 58. If you should fill the balancing tanks in the caisson at Mare Island, and then open them so as to let all the water flow out from those balancing tanks into the main ballast hold, would it have any ten-
257 dency to cause the caisson to commence to rise?

A. No; it would be simply changing the ballast from one point to another in the caisson without affecting it in any way. It would be very much like a man going up stairs from the lower deck to cause the caisson to rise.

Q. 59. (By Mr. BOONE.) Wouldn't it be the same thing if you applied the same conditions to the complainant's machine, if you simply let the water out into the decks?

A. Yes, sir; unless you opened the sides.

Q. 60. But simply transferring the water from the balancing tanks to the deck, it would be the same, wouldn't it?

A. In the case at Mare Island you might open all the openings and have no effect on the caisson. If you open any of the openings of the Schild caisson, then the caisson would rise. One is a potentiality, as in the case of Schild's caisson, and in ours it is not.

Q. 61. (By Mr. WHEATON.) State whether or not it would be possible to obtain any of the new operation described in the patent, Exhibit
258 A, for a caisson, unless the air chamber is used.

A. No, sir.

Q. 62. The first claim of the patent, Exhibit A, calls for a floating-gate with a deep keel on the body "B," with the water tanks "F" in each end of the body, and having outlets "f" above the surface of the water, and suitable valved openings in said body near the water-line, to allow the escape of the water when the tanks are drained through the outlets. Are there any devices of that kind in the Mare Island caisson?

A. No, sir.

Q. 63. Is there any construction to it by which the water can be allowed to flow automatically out of the caisson when the caisson is loaded with ballast and sunk?

A. No.

Q. 64. State whether or not there is any air chamber in the Mare Island caisson?

A. No, sir.

Q. 65. Is there anything in that caisson that takes the place in any way, shape, or manner of the air chamber "e" described in the patent Exhibit A?

A. No, sir.

259 Q. 66. The third claim of the patent, Exhibit A, calls for a caisson with a deep keel, with a floating body "B," a lower water-deck, an air chamber under said deck, valved openings "H H" on a line with said deck, and means for closing said valved openings, consisting of the frame "p," swinging-cover "r," toothed quadrant "q," worm-gear "s," and spindle "u," substantially as herein shown and described. Do you understand the means for closing said valved openings described in said claim?

A. Yes, sir; perfectly.

Q. 67. Are there any means of that kind for opening the gates in the Mare Island caisson?

A. No, sir; none of the construction as read in that claim exists in the caisson at Mare Island.

Q. 68. Do you have any openings in the caisson at Mare Island, on a line with the lower water-deck?

A. There is no lower water-deck; the bottom of the floating body of the caisson is the water-deck. We have no water-deck at all. The

260 opening in that is the opening in the bottom which admits water into this ballast space at the bottom.

Q. 69. How far do you say that opening is?

A. That opening is six or eight inches from the bottom. That is, the gates which control the openings are six or eight inches above the bottom of the caisson.

Q. 70. Do you understand the means described in the patent Exhibit A, for opening the double wicket gate, G.?

A. I do.

Q. 71. Are there any means of that kind in the Mare Island caisson corresponding to those means?

A. No, sir; each gate works there separately.

Q. 72. State whether or not the devices used for opening those gates in the Mare Island caisson have any new features about them more than what was well known to mechanics for similar purposes before the date of the patent Exhibit A, for the last twenty-five years?

A. No, sir.

Q. 73. The means described in the patent Exhibit A, for opening said wicket gates G are again mentioned in the fifth claim, and are

261 specified as the rods "w," pipes "Y," racks "z," and pinion "Z." Now, are there any devices of that kind in the Mare Island caisson?

A. Nothing, except the rods, which are a part of the screw. There is no rack, and no pinion.

Q. 74. Is there in the Mare Island caisson any device which operates in the place of the pinion "Z" mentioned in the patent?

A. No, sir.

Q. 75. Do you know where the idea of having the deep keel "A" in the caisson in Mare Island originally came from?

A. No.

Q. 76. When did you first hear it suggested, or know of its being suggested?

A. Schild told me it had been used abroad, in the river Weser, in Germany.

Mr. BOONE. I object to that, on the ground that it is incompetent, irrelevant and immaterial, as being hearsay; and further, that no statutory notice has been given as a basis for the introduction of any such testimony.

Q. 77. Do you know of what nationality Mr. Schild is?

A. No, sir; German, I suppose. I don't know as a matter of fact.

262 Q. 78. When was the first that you ever saw a drawing of the deep keel "A?"

A. When I first came out to this coast in February, 1882. I think that was the first time I saw it. Schild showed me the drawing.

Q. 79. Who made the drawing?

A. I don't know who made it. I afterwards saw a drawing which was sent from New York. Mr. Prindle, of New York navy-yard, sent me a drawing of a deppkeel caisson.

Q. 80. How long afterwards was it?

A. I think in May or June of that year.

Q. 81. Please look at this blue sun-print and say whether you recognize it or not?

A. I do.

Q. 82. What is there upon it by which you recognize it?

A. My own handwriting, and I have seen the drawing before. I recognize the drawing, or rather the blue print.

Q. 83. When was that drawing made which that blue print represents?

A. I don't know, sir. I see here, written in my own writing, "April, 1882." That is all I know about it. When the drawing was made of which this is a blue print—it must have been made prior to

263 that time.

(The blue sun-print above referred to is introduced in evidence by respondents, and marked Respondents' Exhibit 2.)

(Complainant objects to the introduction in evidence of the blue sun-print Exhibit 2, on the ground that it is immaterial and irrelevant.)

Q. 84. What is that Exhibit 2 a drawing of?

A. It shows a cross section of a floating body or caisson, of a deep keel, showing the entire manner of bracing, the manner of construction, and also of the bottom, for discharging the water from the ballast space, the valves and gates for controlling the flow of water into the ballast space, with their handles, and a small portion of the bottom of the groove, and cross section of part of the diaphragm or plate.

Q. 85. What other drawings? State generally what they were; when you first saw it.

A. There was a side elevation plan of the decks, a cross section of different parts, showing the manner of construction. That is as far as I

remember. Generally they were the detail plans—they were cross section of the detail plans—gotten up for the dry dock at the Brooklyn
264 navy-yard.

Q. 86. And all the drawings taken together represented an entire caisson?

A. Yes, sir. They were submitted for the building of a caisson at the dry dock at New York.

Q. 87. What is your best belief as to the time when you wrote your name on that drawing?

Mr. BOONE. Objected to as incompetent, the witness having already stated that all he knew about it was seeing his name written there with the date attached thereto.

A. It is impos'ible to say. I would not have written it there either after or before that date on the drawing, unless it was to refer to some memorandum or something which I do not now recall.

Q. 88. (By Mr. BOONE.) You are not in the habit of writing any other date on a drawing unless it was the date you made it?

A. Oh, no.

Q. 89. (By Mr. WHEATON.) Have you any reason to doubt that that date was written at the time it shows?

A. No, sir; I have no reason to doubt it.

Q. 90. Where did you say this drawing came from?

265 A. That drawing came from New York originally. It might have passed through the Bureau of Yards and Docks to me, or it might have come to me direct. I cannot tell the means by which it came to me.

Q. 91. Who is Mr. Prindle?

A. He is a civil engineer in the United States Navy, and stationed at the Brooklyn navy yard in New York.

Q. 92. Was that drawing got up by him while he was in the employ of the Government?

A. Yes, sir; I guess it was. They wanted to build a new caisson at the navy yard at New York, and this is a print of the drawing he made for them.

Mr. BOONE. I object to this testimony on the same ground I stated before, that it is incompetent, irrelevant, as no notice has been given of any such testimony.

Cross-examination by Christopher C. Wolcott.

Q. 1. (By Mr. BOONE.) I will ask you whether or not the Mare Island caisson has a plate "A" to form a deep keel, the bottom and ends of which is shaped like and adapted to fit the entrance of the dock.

A. Yes, sir.

266 Q. 2. Has it got a floating body or vessel connected with it?

A. Yes, sir.

Q. 3. Has it got tanks at either end of the floating vessel?

A. Yes, sir.

Q. 4. Have those tanks got outlets?

A. Yes, sir.

Q. 5. Leading into the deck so as to discharge the contents of these chambers or tanks upon the deck of the vessel, the lower deck?

A. No, sir.

Q. 6. What do they discharge into?

A. Into the hold.

Q. 7. Then they have outlets discharging from the tanks into the hold of the vessel?

A. Yes, sir.

Q. 8. How is the water in the Mare Island caisson removed from the hold of the vessel?

A. By means of pumps. When she is sunk and allowed to run into the dock, and when the dock is empty, the water is pumped from the caisson.

Q. 9. That is, the water is removed from the hold of the vessel by means of pumps?

267 A. Yes, sir.

Q. 10. What other object or duty do these pumps perform in connection with the operation of the caisson?

A. None.

Q. 11. The sole object of these pumps, then, is to take the water from the hold and discharge it overboard?

A. Yes, sir.

Q. 12. What is the object of the opening marked "H" in complainant's patent?

A. It is to admit and discharge water from the outside into and from the ballast deck.

Q. 13. Then, as far as discharging the water is concerned, is not the pump in the Mare Island caisson gate an equivalent of the opening in the side of complainant's vessel,

A. No, sir; not wholly. You must have conjunction between them and your ballasting tanks to have it operate.

Q. 14. Well, so far as the removing of water is concerned from the vessel, are not the pumps an equivalent of the openings in the side of complainant's vessel?

A. Oh, yes.

268 Q. 15. As far as the discharging of water from the vessel is concerned they both perform the same duty, do they not?

A. Well, no, Mr. Boone, they do not perform the same duty, because this opening is simply the means itself, the opening or passage way, but the pump does another duty, it lifts the water and discharges it.

Q. 16. But its duty is simply to discharge the water from the vessel in either case, is it not?

A. No, you have to have force applied.

Q. 17. But is not the result of the two the same, the final result, the freeing of the vessel from water?

A. No; if you put it this way—if you say that the air-chamber and the balancing-tanks, together with the opening there, is the equivalent of the pumps and steam, and its discharge, yes; otherwise, no. You must have a conjunction of all those different points, you see.

Q. 18. Then you say that the air chamber and the opening and the balancing-tanks are the equivalent of the pump and the power used to run the pump?

A. Yes, sir.

269 Q. 19. The pump in that case performs the same duty it does in any other case, doesn't it?

A. Yes, sir; discharges the water.

Q. 20. That is an old and familiar device, known to yourself and mechanics many years before the date of this patent, is it not?

A. Yes, sir.

Q. 21. Then I will ask you whether you find in the Mare Island caisson-gate any equivalent of the water-tanks and the outlets from the water-tanks and from the vessel in complainant's machine?

A. No. As I said before, you have got to take the thing as a whole. You have got to take the three things in the complainant's machine, its potentiality, which is the air space below——

Q. 22. (Interrupting.) What is an air chamber?

A. It is some air space to cause flotation.

Q. 23. What is it in the Mare Island caisson that performs the duty of flotation?

A. Nothing, when it is sunk.

Q. 24. Well, what when it elevates?

A. The same in both cases, the outside form of the floating body.

270 Q. 25. What duty does the floating body perform in complainant's machine that is not performed in the caisson at Mare Island?

A. Schild's is an automatic machine.

Q. 26. Then the difference is, you have a pump which removes the water and allows the floation to take place instead of the air chamber?

A. Yes; and I have another thing. The complainant's is a self contained machine and the one at Mare Island is not.

Q. 27. Suppose the complainant had no air tank in his machine, and suppose the water, when the caisson is sunk and the tanks filled with water—suppose that the water was removed by means of a pump, what would be the result?

A. It would rise, float.

Q. 28. Then, in that case the pump would perform a duty equivalent to the duty performed by the outlets and water-tanks in complainant's machine without the air chamber, wouldn't it?

A. No.

271 Q. 29. But you say it would float if there was no air chamber there and the pump was applied to remove the water?

A. Yes; but then you have got to apply power, one way or another. You have got to have the power self contained in the structure, or get it from some other source.

Q. 30. My idea is to remove the air chamber from the complainant's machine, and remove the water from the inside of the vessel by means of pumps and power. Now, wouldn't you then have an equivalent of the water-tanks with the outlets in complainant's machine?

A. I would have a similar machine to the one at Mare Island, exactly.

Q. 31. But wouldn't you have equivalent of the complainant's machine with its water-tanks and its outlets—wouldn't the pump in that case perform the same duty that water-tanks and outlets had in complainant's machine?

A. No, sir.

Q. 32. Why?

A. For the simple reason that you have got the water-tanks and the outlets that cease to have any function in the machine. It would

272 work just as well without the outlets and the tanks with a pump.

Q. 33. Then does not that pump in that case perform the duty of the tanks and outlets?

A. No, because they are not necessary at all because the pump does the whole thing.

Q. 34. You say the pumps removes the water from the vessel, and does no other duty?

A. No, sir; it does not.

Q. 35 Now, do not the openings in complainants' machine remove the water from the side of the vessel?

A. Oh, no; they furnish the means of exit.

Q. 36. But the water runs out of that means of exit, doesn't it?

A. Yes, but it is not due to the fact of their being there that the machine operates.

Q. 37. Could the complainant operate this machine unless he used a pump?

A. The mere fact of their being there alone does not give any value to the machine. You must have some power to make them valuable, and you must have a conjunction with other things to make the machine.

273 Q. 38. You say the only duty performed by the pump in the Mare Island machine is to remove the water from the inside of the vessel?

A. Yes, sir.

Q. 39. And you say the openings in complainant's machine also remove the water from the inside of the vessel?

A. It allows the water to pass out.

Q. 40. Then you think that because you have got a pump there which requires power to lift the water out that you perform a different duty from allowing it simply to run out of the vessel; is that so?

A. Why, certainly; they are just as separate and distinct operations as anything can be. There is no similarity between them at all.

Q. 41. It is the removal of the water from the complainant's machine that allows it to rise, is it not?

A. Yes, sir.

Q. 42. And it is the removal of the water from the Mare Island machine that allows it to rise?

A. Yes, sir.

Q. 43. Then it is simply a question as to the means employed

274 for removing the water?

A. Yes, sir; entirely so.

Q. 44. The means employed in the Mare Island machine is a pump and power?

A. Yes, sir.

Q. 45. And in complainant's machine it is openings which allows the water to run out, isn't it?

A. No, sir.

Q. 46. What is it that removes the water from complainant's machine?

A. It is a store of power placed in the air-space below.

Q. 47. Then you hold that in complainant's machine it is the air-chamber and the openings together?

A. The air tank, and balancing tanks, and openings.

Q. 48. Then it is the air-tank, and balancing tanks and openings which remove the water, is it?

A. Yes, sir.

Q. 49. The pump in the Mare Island machine performs the same duty as that combination, does it not?

A. Yes, sir.

Q. 50. Then don't you find that the pump used in the Mare
275 Island machine is the equivalent of the air chamber and tanks and the outlets in complainant's machine?

A. Oh, yes; it is a provision for a complete operation in one case, and it is a provision for a complete operation in the other case. They arrive at the same point.

Q. 51. Then I will ask you if you do not find in the Mare Island caisson gate an equivalent of the following combination: "A caisson or floating gate, consisting of the plate A having its bottom and ends shaped like and adapted to fit the entrance of the dock, lock, or harbor, the buoy or floating vessel or body B having the lower water-deck E, an air-chamber *e*, under said deck, and valved openings H H, on a line with said deck, and the water tanks f on each end of the body, said tanks having outlets f above the surface of the water." Don't you find that combination, or its equivalent, in the Mare Island machine?

A. Yes; I find a perfected machine for operation in both cases.

Q. 52. And you find the equivalents of the tanks, air chambers, and outlets?

A. No, sir; I hav'n't said that.

276 Q. 53. Well, you find that the pump performs the same duty and is the equivalent of the combination of the tanks, air-chamber, and outlets?

A. I don't find any air chamber, but I find a pump which removes the water. The result of the operation of the combination in each case is the same, it operates the caisson.

Q. 54. You said a minute ago that the tanks, air chamber, and the outlets were the equivalent of the pump?

A. There is no question about that, it raises the caisson.

Q. 55. You find the plate?

A. Yes, sir.

Q. 56. And you find the floating body?

A. Yes, sir.

Q. 57. And you find a pump, which you say is the equivalent of the tanks "F," the air chamber "e," and the outlets "f," do you?

A. Yes, sir; the pump and power pumps the water out of the caisson.

Q. 58. The power and the pump, then, is the equivalent of the tanks, and air-chamber, and outlets?

A. The power when supplied to the pump by steam is not in the caisson, as I said before, it is supplied from steam outside.

277 Q. 59. You couldn't operate the pump without power?

A. No, sir.

Q. 60. That is an old device familiar to all mechanics, and known to perform this operation, is it not?

A. It is the steam drives the pump, yes.

Q. 61. Do you find in the Mare Island machine any openings at or near the water level for admitting water into the float?

A. No, sir.

Q. 62. Didn't you find openings in the bottom of the Mare Island machine?

A. Yes, sir; but that is some five or six feet below the water level.

Q. 63. Wouldn't they admit water into the float if they were open?

A. Yes, sir; into the bottom of the floating body.

Q. 64. These openings are valved openings, are they, so that they can be opened and closed?

A. They are gates in a pipe; what they call a large gate in a pipe or valve.

Q. 65. Now, isn't the only difference in the practical operation
278 of these two machines the fact that in the Mare Island machine the water is removed by means of a pump, while in the complainant's machine the water is allowed to drain itself out; isn't that practically the only difference?

A. Oh, no; there are more material differences, many of them.

66. Well, I mean in the operation of the machine?

A. No. As I said before, the complainant's machine is a self-contained machine.

Q. 67. State what you mean by a self-contained machine.

A. A machine which has within itself elements all which are necessary to complete its action.

Q. 68. And that is the case with the complainant's machine?

A. Yes, sir; it has the power, and it has the means of developing that power and making a complete operation in itself, while the Mare Island machine does not.

Q. 69. How is it supplied at the Mare Island machine?

A. In the first place it has no means of freeing the water in itself.

Q. 70. But it has a pump?

279 A. Yes, but the steam is supplied to it from a boiler some six or eight hundred feet away. The manner of operating is entirely different, and the manner and time of opening the valves entirely different.

Q. 71. When you refer to "the manner of opening the valves," as a difference, you refer to the specific mechanism for opening them, don't you?

A. Yes, sir; to the manner of doing it.

Q. 72. Well, that involves the manner of doing it, the mechanism?

A. No, in the case of the complainant's machine the mechanism is situated in one part, and in the Mare Island machine it is in a different place. The openings in the complainant's machine are automatic, while the machine at Mare Island they have to be opened at different times.

Q. 73. Well, that is only a question of mechanism which you used, isn't it?

A. No, sir; because you open in the complainant's machine both at one time.

Q. 74. That is due to the different construction of the mechanism used, isn't it?

A. Yes, sir; of course.

280 Q. 75. In the Mare Island machine you have a mechanism and power, a mechanical power applied to open each gate separately.

A. Yes, sir.

Q. 76. While in the complainant's machine there is a mechanism by which a single application of power opens the gates simultaneously?

A. Yes, sir.

Q. 77. In the complainant's device, when the power is applied, one gate opens in one direction and the other in an other, doesn't it?

A. Yes, sir.

Q. 78. Do you know what the object of opening them simultaneously is?

A. I have no idea what the object is, sir.

Q. 79. There is no object, is there, in doing so?

A. I don't see anything gained by it at all. I don't know what the object is.

Q. 80. By opening the gates separately in the Mare Island machine you obtain the same result, do you not, that the complainant does in his machine?

A. By opening them separately, one at a time, you open the gates, of course.

281 Q. 81. You don't open them as quick as the complainant does in his machine, do you?

A. I don't know. I never saw his machine operate.

Q. 82. What is your idea; you are a mechanic, are you not?

A. Of course, if one operation performs a double function it would do it one-half as quick as the other.

Q. 83. And everything being equal, where both gates move by one operation, the complainant would open them quicker than you would where you open them singly?

A. Yes, sir.

Q. 84. And that is an advantage which he gains, isn't it?

A. I don't consider it an advantage.

Q. 85. Well, it is a result which he gains, is it not?

A. It is a result, unquestionably. With a double gate it is possible to repair one gate by opening the other, which he can not do. We can raise the inside gate and repair it, because we have the outer gate closed, which he can not do.

282 Q. 86. The only object attained by the complainant by his mechanism for opening those gates is to open the gates, isn't it?

A. I would suppose so.

Q. 87. What other object does the Mare Island caisson gates attain with its mechanism?

A. Open the gates; and we can remove the gates that way by that operation.

Q. 88. These devices, which are employed in both cases, are well-known devices in mechanics, are they not?

A. I don't know so much about the Schild machine. Of course, a rack and pinion is old, and a screw is old.

Q. 89. Now, the idea of having two racks, one on each side of a pinion, for moving an object in opposite directions is not a new device, is it?

A. No, sir; I guess not.

Q. 90. The device in the Mare Island caisson gate is an ordinary mechanical device, isn't it?

A. Yes, sir; used many times before.

Q. 91. I will ask you whether you find in the defendant's machine this combination. You have already stated that you found the plate
283 "A," the deep keel, having its bottom and ends shaped like and adapted to fit the entrance of the deck, lock, or harbor, and also that you found the body, "B," for floating and sinking such plate. Now, I will ask you if in combination with those devices you found a wicket gate covering each side of an opening in the keel, and the means for operating the gates in the Mare Island machine?

A. I do not find wicket gates, but I find sliding gates.

Q. 92. Well, you find gates, do you?

A. Those gates differ in practice and differ in operation.

Q. 93. The mechanism is different, you say, but you did find a mechanism for operating them in the Mare Island machine?

A. Yes, sir; the screw and the lever.

Reexamination of Christopher C. Wolcott:

Q. 1. (By Mr. WHEATON.) Is it necessary in the complainant's caisson that the upper surface of the water, which is used for ballast, shall
284 be lifted and kept in a position above the level of the water in the outside of the caisson?

A. I don't understand your question.

Q. 2. (Q. 1 read.) By the water for the ballast I mean water on the inside of the caisson which is used for ballast. Is it neccessary that the surface of that water on the inside of the caisson should be lifted, and be kept higher than the surface of the water on the outside of the caisson, in order that its gravity will enable it to flow out through the openings, "H"?

A. Of course.

Q. 3. Now, state whether or not this air chamber in the complainant's machine underneath the lower deck lifts the caisson, and with it the water on the inside of the caisson, so as to keep the upper surface of the ballast water above the surface of the water on the outside?

A. Yes, sir.

Q. 4. Please state whether or not that is what you mean when you say that the power or potentiality of the complainant's machine is within itself.

285 A. Yes, sir.

Q. 5. Now, is there any power or potentiality in the machine of the caisson at Mare Island, which lifts the water and keeps it in a position where it can be made to flow out of the caisson?

A. No, sir; not in the caisson.

Q. 6. Does that power have to be brought from the outside?

A. Yes, sir.

Q. 7. Please state whether or not the method of raising caissons or vessels of any kind which have been sunk by being filled with water, by pumping that water out of them, is very old.

A. Yes, sir; very old.

Q. 8. How long have you known of its being practiced?

A. I have known of its being practiced ever since I first saw the dry dock in New York, in 1861.

Q. 9. Please state how that was used in the dry dock in New York in 1861.

A. The water was allowed to flow into the bottom, then, by means of pumps on the deck, by means of power—the water was pumped up and lifted over the sides.

Q. 10. Please state how that caisson gate was used at New York.

286 A. It was a gate placed across the entrance of the dry dock at the Brooklyn navy-yard, at New York.

Q. 11. How was it used and operated?

A. It was put across the entrance of the dock the same as ours is at Mare Island, except it served as an addition to a common lock-gate, which was hinged at the two vertical sides and met together in the center of the dock on a mitre-still. The caisson formed a secondary gate some little distance outside of it. The caisson was used and swung into place and sunk by admitting water into the hold, and rested when it sunk in a groove in the masonry at the entrance of the dock.

Q. 12. State whether or not the water was pumped out of the dock after that?

A. Yes, sir; the water was pumped out of the dock, and the dock freed from water. When they wished to fill the dock again the openings through the lower part of the caisson were opened and the water flowed through the caisson, and then through openings in the mitre-

287 gates, we call them, and the dock was filled. To remove the caisson the water was pumped, by means of very large pumps on the deck, out of the vessel.

Q. 13. What openings were there through the lower part of that caisson for admitting water from the outside when you wanted to fill the dock, when it had been once empty?

A. My recollection is there were four openings passing right straight through the body of the caisson. There were four large pipes or conduits which passed to the outside of the body, and the water passed right through these pipes.

Q. 14. (By Mr. BOONE.) How old were you then?

A. I was nearly fourteen years old then.

Q. 15. (By Mr. WHEATON.) How were those pipes closed to keep the water from rushing through?

A. They had gates that shut down.

Q. 16. Do you recollect how those gates were operated?

A. No, sir; I do not. I recollect a man going down there and turning a handle, but that is all I remember.

Q. 17. Now, I will ask you whether there is in the caisson at

288 Mare Island any air chamber "e," or any other power in the caisson itself for lifting water?

A. No, sir.

Q. 18. Now, supposing that the complainant's air chamber "e," the balancing-tanks, and the outlets "H" were the means for emptying the caisson, on account of being such means was the equivalent of the pump with the power applied—in that case would there be anything in the patent, Exhibit A, except the substituting of equivalents for the old well-known method of emptying a caisson by a pump and power?

Mr. BOONE. I object to the question on the ground that it is incompetent, irrelevant, and immaterial, and as calling for the opinion of the witness on a matter on which he has not been shown to be competent to testify.

A. No, sir; there is nothing.

Q. 19. Please state what experience you have had in the construction or use of machinery.

A. I have had considerable.

Mr. BOONE. If you want to show that he is an expert—is that what you want?

Mr. CAREY. Yes, sir.

289 Mr. BOONE. Then I will admit that Mr. Wolcott is perfectly competent as a mechanic to testify in this case.

Q. 20. (By Mr. WHEATON.) Who owns that caisson at Mare Island?

A. The United States Government. It belongs to the Navy Department.

Q. 21. Does Mare Island and the works there also belong to the United States Government?

A. Yes, sir.

Q. 22. Is it held and occupied by the officers and employees of the Government?

A. Yes, sir.

Q. 23. And under Government supervision all the while?

A. Yes, sir.

Q. 24. The defendants in this case have no interest in that caisson, have they?

A. Oh, no, sir.

Q. 25. And have nothing to do with it further than to operate it under the direction of the United States Government?

A. That is all, sir.

Q. 26. (By Mr. CAREY.) You started to say—you stated that the

290 openings in the two machines are not used in the same way, but are used at the same times—you spoke in your answer——

A. (Interrupting.) Our manner of operating the gates is to open them all right straight through the whole line of inside gates that open into the dock through the caisson, to fill the dock. We open all those gates inside first, and get them out of the way. Then that causes an entire opening of sixteen by twenty-four inches free from any impediment to the flow of water. When you desire to start the operation you go along there and open the two end gates, you see, and that increases the opening; and we regulate the opening of those gates from the ends of the caisson towards the middle of the caisson.

Q. 27. Well, I thought you were alluding to the openings in the hold as well?

A. No, sir; we don't touch those at all until after the water rises up to them.

Q. 28. Well, is there any difference in sinking and raising—is there any difference in the two machines?

291 A. Oh, yes; when we open and let the water into the caisson at Mare Island we open the gate at the bottom of the floating-body when the water comes up to it to allow the water to flow in there and give

it ballast, and close it down again when we get enough ballast in there; and when the gate is lifted out of its place and floated away the pumps remove this water; and when the gate is brought back again these openings are opened to sink it in place, and when it is sunk in place, and the water removed from the dock, the water is pumped out from the ballast deck of the caisson, or from the bottom of the caisson, either into the dock or outside the dock. The complainant's machine is put in position by the opening of the gates "H H," in conjunction with the pouring of water from extraneous sources into the ballast-tanks at either end, and that sinks the caisson down until the level of the water reaches these valves "H H," you see, and then the water flows in on to the ballast-deck, and then this operation of filling water into the ballast-tanks is suspended.

292 The water continues flowing in until the caisson sinks down upon the bottom of the dock, and the valves "H H" are closed to hold it in position until the pumps bring it up against the shoulders. Then if they want to discharge the water, they open the gates "H H" and let the water flow into the dock.

Q. 29. The complainant's machine, then, is automatic in raising, but is not automatic in sinking?

A. Yes, sir; it has to have power applied to sink it.

Q. 30. (By Mr. BOONE.) The power of sinking the complainant's machine is obtained from extraneous sources?

A. Yes, sir.

Q. 31. In the defendant's machine it sinks itself by taking water into openings in the side?

A. Yes, sir.

Q. 32. And in order to get rid of the water you have to get extraneous power from the outside?

A. Yes, sir; pump it out.

Q. 33. (By Mr. WHEATON.) Do you know of anything new in the complainant's machine, except that he has changed it to make it automatic in raising instead of being automatic in sinking?

293 Mr. BOONE. I object to that question as immaterial, incompetent, and irrelevant, and as calling for the opinion of the witness.

A. Nothing.

Q. 34. I just noticed in operating the gates in the model, exhibit 1, that if the gates move at one time, when the outer gate is partly down, that the inside gate will be only partly raised, and that the water passing over the top of the outside gate will therefore strike the inside of the inside gate. Please state whether, in your opinion, whether that would be an advantage or disadvantage to have the gates move at the same time, as is shown in complainant's patent?

(Question objected to by complainant as incompetent, immaterial, and irrelevant.)

A. It is an objection, of course.

Q. 35. Do you know whether it was so considered by the Navy Department, and that that was the reason it was rejected—that feature of Mr. Schild's patent?

A. No, sir; I don't know.

Q. 36. (By Mr. CAREY.) Is there any other difference between

294 the two machines that you can think of than you have stated?

A. In the early part of my testimony I went over all the differences in the two machines.

Q. 37. Well, there is nothing else that you can think of *f*?

A. No, sir.

CHRISTOPHER C. WOLCOTT.

(Examination continued, in conformity with agreement of counsel, until Wednesday, August 22nd, 1888, at half-past ten o'clock a. m.)

295 *Deposition of George W. Dickie.*

WEDNESDAY, *August 22nd*, 1888.

Present: Mr. Boone, of counsel for complainant; Mr. Wheaton, of counsel for respondents.

Examination-in-chief of George W. Dickie, on behalf of respondents.

Q. 1 (By Mr. WHEATON.) State your name, age, place of residence, and occupation.

A. My name is George W. Dickie, my age is forty four years, my residence San Mateo, and my occupation engineer and manager of the Union Iron Works.

Q. 2. Please state whether or not you ever saw any floating caisson-gates in use in the United States prior to the year 1883; and, if so, when and where?

Mr. BOONE. I object to the question on the ground that it is incompetent, immaterial, and irrelevant; and on the further ground that no notice has been given of any such testimony, as is required by statute.

A. I have seen quite a number of floating-gates or caissons.

296 There is one at Hunters Point, in the city and county of San Francisco, and there are quite a number at New York, the Erie Basin docks especially. There is one at Baltimore, and one at Philadelphia, all of which I have examined previous to that date.

Q. 3. When did you see the floating caisson-gate at Baltimore?

A. In about the end of July, 1883.

Q. 4. Do you know when it was built?

A. I can not give the date of the building of it.

Q. 5. Have you photographs of that dock and caisson-gate at Baltimore, which you have examined?

(The same objections by complainant.)

A. Yes, sir; I got a set of photographs at the time and brought them here.

Q. 6. Please look at the book of photographs now before you and say whether those are the ones?

(The same objections by complainant.)

A. These are the photographs.

Q. 7. Now, please look at these smaller photographs shown you and state whether you recognise them as being photographs of the larger photographs which are your property and which you have just referred to?

297 (The same objections by complainant.)

A. Yes, sir; I recognise them as copies of the original photographs.

(Seventeen copies of the photographs above referred to are introduced in evidence by respondents, and are marked, respectively, "Respondent's exhibit "3 to 17," inclusive.)

(The same objections by complainant.)

Q. 8. Please state in as few words as possible what Exhibit 3 represents.

(The same objections by complainant.)

(It is agreed by both complainant and respondents that all the testimony of this witness relating to the Baltimore caisson-gate and the photographs connected therewith shall be considered as having been objected to on the grounds above stated.)

Mr. WHEATON. Respondents announce that they are introducing this evidence for the purpose of showing what kinds of caissons were in use before the complainant's inventions, for the purpose of showing the state of the art, and that none of this evidence is claimed to be in anticipation of the complainant's invention.

298 A. Exhibit 3 represents the caisson of the Baltimore dock in position, with the dock empty.

Q. 9. What does Exhibit 4 represent?

A. Exhibit 4 represents a view of the Baltimore dock, with the caisson in position, and the water just admitted to the dock.

Q. 10. How is the water admitted to the dock, as shown in that photograph?

A. As represented on this photograph, Exhibit 4, the water is admitted to the dock through the side culvert.

Q. 11. What does Exhibit 5 represent?

A. Exhibit 5 represents the same condition of things as in Exhibit 4.

Q. 12. And is it a photograph of the Baltimore dock?

A. Yes, sir; it is a photograph of the Baltimore dock.

Q. 13. What does Exhibit 6 represent?

A. Exhibit 6 represents the Baltimore dock, looking from the caisson to the head of the dock. The caisson is not shown.

Q. 14. It shows the back end of the dock?

A. The head of the dock or the upper end of the dock.

299 Q. 15. That is, the end of the dock furthest from the water?

A. Yes, sir.

Q. 16. What does Exhibit 7 represent?

A. Exhibit 7 represents the engine-house and the caisson in position, a deck view of the caisson, and it also shows Simpson and his friends; and the man who claims to have invented the deep center keel is here too, Prindle.

Q. 17. Who is the second man from the left shown in that photograph?

A. The second man from the left is Engineer Prindle, of the Brooklyn navy-yard, Department of Yards and Docks, or was at the time that the photograph was taken.

Q. 18. What does Exhibit 8 represent?

A. Exhibit 8 represents the Baltimore dock with the dock full. That shows water on each side of the caisson, the caisson being in position, and this photograph was evidently taken at high water.

Q. 19. What does Exhibit 9 represent?

A. It represents the same dock and caisson, showing the operation of filling the dock through the caisson, the caisson-gates being open.

300 Q. 20. Just explain, shortly, how that was done.

A. There are passages formed through the structure of the caisson in which gates are placed on each side, one gate towards the outside—that is, towards the tidal water—and a gate towards the inside, or dock side. These double gates are fitted out so that repairs can be effected at one gate while the other excludes the water.

Q. 21. Were these gates upon both sides of that caisson at each end of each opening through the caisson?

A. Yes, sir; at each end of each opening of the caisson a slidding-gate is fitted.

Q. 22. Which way do those gates open?

A. They were slidding gates, having the water pressure on the outside.

Q. 23. In which way did they open when opened and closed?

A. Vertically.

Q. 24. By what kind of device were they operated in closing and opening?

A. On this ca'sson they were opened by screws and hand-wheels independent for each gate.

301 Q. 26. What connection had you, if any, with the building of the caisson at Mare Island, which was built by the Union Iron Works?

A. I had charge of the building of it as manager of the Union Iron Works.

Q. 27. How do the devices and manner of opening the gates which let the water through the deep keel of that caisson compare with the devices and manner of opening the gates which admit the water through the passages of the caisson at Baltimore, as shown in these photographs?

A. The manner of operating the gates was very much the same in both cases. The gates were operated by a screw and hand-wheel. The only difference was in the distance between the gates. In the Mare Island caisson the gates are close together, being placed on the web-keel. The gates are placed and fitted on each side of that web-keel, and are opened by rods and screws in the same manner as on the caisson at the Baltimore dock, except in the distance that these gates are apart.

302 Q. 28. Me question only referred to the devices and methods of opening the gates, without any reference to their location. Please state specifically how the devices and methods of opening the gates on the caisson at Mare Island compare with the devices and methods of opening the gates on the cais'on at Baltimore, without any reference to the location of those gates?

A. The devices are the same and the method is the same—by a screw, nut, and hand-wheel.

Q. 29. What does Exhibit 10 represent?

A. Exhibit 10 represents the same dock being filled in the same manner as shown in Exhibit 9, the filling having advanced somewhat further.

Q. 30. What does Exhibit 11 represent?

A. Exhibit 11 represents the same dock, with a vessel in position in the dock and the dock pumped out, showing the steamship "Andean."

Q. 32. What does Exhibit 12 represent?

A. Exhibit 12 represents the same dock, looking from the outer end of the dock, showing the stern of the same vessel, the same vessel being in position in the dock.

Q. 33. What does Exhibit 13 represent?

303 A. Exhibit 13 represents the same dock; a view taken from the bottom of the dock, the same vessel being in the dock; and a view showing the stern of the vessel from the bottom of the dock.

Q. 34. What does Exhibit 14 represent?

A. Exhibit 14 represents the same dock, with two vessels in position in the dock, with the dock pumped out.

Q. 35. What does Exhibit 15 represent?

A. Exhibit 15 represents the same dock, also the approach to the dock, the adjacent works, the vessel in the dock, and the dock pumped out.

Q. 36. Does it also show the high water on the outside of the dock?

A. Yes, sir; the view is taken at high-water.

Q. 37. Does it represent the natural level of the water at highwater on the outside of the caisson?

A. Yes, sir; it represents the highwater mark on the caisson; that is, supposing that it is highwater, and I presume it is highwater. This is apparently taken at highwater.

Q. 38. Well, does that represent the natural depth of the water at that height?

A. Yes, sir.

304 Q. 39. What does exhibit 16 represent?

A. exhibit 16 represents the same dock with the steamship Andean, being placed in position on the blocks preparatory to the dock being pumped out.

Q. 40. What does Exhibit 17 represent?

A. Exhibit 17 represents the top part of the steamship "Andean," apparently in the dock, but it don't show much of anything?

Q. 41. Well, does it show the caisson at the back end of the vessel?

A. Yes, sir; it shows the caisson, although not very distinctly. It is a little strain of the imagination to find the caisson there. It is rather a defective photograph.

Q. 42. Now, will you please go on and describe the operation, and how the caisson was put into place to operate as a water-gate at that Baltimore dry dock?

A. That is, supposing the caisson to be out of position?

Q. 43. Yes.

A. And the dry dock full?

Q. 44. Yes, and the dock full of water?

305 A. When the dock is full of water, and the caisson out of position the caisson is them floating light, that is, the caisson, has been pumped out. It is then brought into position over the grooves in the sill of the dock, and when correctly in position, so that the edge of the caisson will drop into the grooves, the flood-gates are opened, admitting water to the hull and water compartments of the caisson, and by that means the caisson is sunk until it rests in the grooves that fit the outside line of the structure. The pumping then commences in the deck, and the increased pressure——

Q. 45. (Interrupting.) In that Baltimore caisson, represented by these photographs, were the bottom and ends of the caisson, fitted and adapted to fit the entrance of the dock?

A. Yes, sir; the bottom and the ends are shaped so as to fit into the groove that is made in the entrance of the dock, the sill of the dock, as it is termed. There is a groove cut there that fits the shape and contour of the bottom and ends of the caisson. At each side of the caisson is fitted a larger rubber pad or packing that takes against the side grooves or ledge that is formed by the side of the groove on the side next the
306 dock. As soon as the pumping begins in the dock the difference between the height of the outside and inside water causes a pressure on the outside of the caisson which forces the caisson against the ledge, and by means of the rubber packing between the stone work and the fence of the caisson a joint is made practically water-tight.

Q. 46. Then, what next occurs?

A. The pumping goes on and the water is all pumped out of the dock, and operations can then begin on the vessel that has been placed on the blocks.

Q. 47. How does the method and operation of sinking the Mare Island caisson compare with the operation by which those caissons have been sunk in the Baltimore dock?

A. They are precisely the same. When the dock at Mare Island is full, and the ship placed in the dock, the caisson is floated into position exactly over the groove in the dock, the valves are opened and the caisson is sunk by admitting water to the interior, just as in the Baltimore dock.

Q. 48. When they desire to remove the vessel from the dry dock
307 in Baltimore, how is it done? Please describe the whole operation.

A. When they proposed to fill the dock to float the vessel out, the flood-gates are opened, and usually the culvert-gate is opened first, in order to avoid the disturbance of the blocks by allowing the water to pass into the dock in that way, in a small quantity to begin with, and as soon as the sill of the dock is covered they open the other gates through the caisson, the caisson-gates which form the main inlet to the water, admitting water through the caisson until such time—but previous to the time of that, if it remained in the caisson the water was let into the dock; if it was pumped out, and the caisson remained without any water in it during the time the dock was in operation, unless enough to prevent it jumping in the groove. This is done to prevent the weight of the caisson from injuring the sill of the dock. As soon as the water reaches the level, and before it reaches the level, the sea gates which admit water into the interior of the caisson are opened, allowing the water to raise in the cais-
308 son to the same height as it is outside, and which remains in that condition until the level of the water in the dock is the same as the level of the water outside; then the sea gates of the caisson are shut, and the pumps of the caisson are started, and the water is discharged from the caisson until it floats out of position in the groove, and it is then removed out of the way of the ship, so that the ship can be hauled out.

Ans. to Q. 48 (as corrected by witness). When they proposed to fill the dock to float the vessel out the flood-gates are opened, and usually the culvert-gate is opened first, in order to avoid the disturbance of the blocks by allowing the water to pass into the dock in that way, in a small quantity

to begin with, and as soon as the sill of the dock is covered they open the other gates through the caisson, the caisson-gates which form the main inlet to the water, admitting water through the caisson until such time, but previous to this the water used for sinking the caisson had been drained out into the dock, or pumped out, leaving only enough
309 weight to ensure the caisson from lifting or jumping the groove by the weight of water on the outside. This is done to prevent the weight of the caisson, etc., etc.

Q. 49. Now, what is the object of letting water into the caisson while the dry dock is being filled with water?

A. The object is to prevent accidents by the caisson jumping out of its position before the level of the water is the same in the dock as it is outside; the flotation of the caisson being such as a much less height of water will float it than what is generally the case at high water, either inside or outside the dock. If the water was left out of the caisson when the dock was being filled, the chances are that the caisson would float before the water inside the dock would reach to the level of the water outside. Such an accident has happened through carelessness in neglecting to fill the caisson as the dock was being filled, and consequently the rush of water would go into the dock as soon as the caisson lifted, and would probably injure the masonry of the dock.

310 Q. 50. What was the objection to the water coming into the dock fast?

A. The objection is that the vessel in the dock would be driven to the upper end of the dock which, would probably injure the vessel; and the danger to the caisson would also be very great. The caisson would be carried right into the dock by the rush of water.

Q. 51. Which of those photographs represent the water flowing through the caisson into the dock, for filling the dock, if any of them?

A. Exhibit 9 and Exhibit 10 show the water flowing through the caisson into the dock. Exhibit 4 shows the first admission of water through the side culvert into the dock.

Q. 52. How does the method and operation by which the dock at Mare Island is filled with water and the caisson removed compare with the method and operation by which the dry dock was filled with water at Baltimore, and that caisson removed from the mouth of the dock?

A. Operation is the same. That is, it can be performed in the
311 same way, although I understand that the Mare Island dock has been filled more through the side culvert rather than through the gates of the caisson. The side culve't of the Mare Island caisson is made large—made large enough to be used for that purpose, and, I think, although it is a matter that I am not sure of, that they use the side culvert in preference to using the gates, although they have used the gates through the caisson.

Q. 53. Suppose they do use the gates through the caisson or keel for filling the dock at Mare Island, then, how is the operation of the filling of the two docks and the removal of the two caissons compare with each other?

A. The operation in both cases would be identical. The sea-valve admitting the water into the interior of the caisson would be required to

be opened until such time as the level of the water was the same on each side; then the sea-valves would be closed, and the caisson pumped out until floated out of position.

312 Q. 54. What is the height at which the tide ebbs and flows at the Baltimore dry dock?

A. The tide varies very much there. The average tide is somewhere about fourteen feet.

Q. 55. What is the average height of the ebb and flow of the tide at Mare Island?

A. From four to six feet. Probably the average is from four feet six inches to five feet.

Q. 56. What difference, if any, does that make in the practical or profitable operation of a caisson with a deep keel and high flotation between the two places?

Mr. BOONE. I object to the question, on the ground that no proper foundation has been laid for the question to show that this witness is competent to testify in regard to that matter.

A. Where there is a great rise and fall it would be practically impossible; that is, commercially impossible, to operate a dock with a caisson that would only float out of position at high water, and consequently, the floating body of a caisson must be made deep enough so that it will be possible to float it out of position with the tide somewhere about half-tide.

313 That is the case with the Baltimore dock. At the Baltimore dock they have at full high tide twenty-two feet of water inside the dock over the blocks. If they want to dock a vessel drawing, say twelve feet of water, they would dock that vessel when the tide had fallen so that there would be about thirteen feet, say a foot more than the draft of the water over the blocks, and then place the vessel on the blocks, and put the caisson in position. It is necessary, therefore, to have the caisson to float with that draft of water, and consequently a deep floating-body is a necessity in a caisson. If they could only fill the caisson at high-tide they would have all that water to pump out of the dock without any corresponding advantage in the way of revenue; that is, they would have to pump as much water from the dock for a small vessel drawing a small amount of water as they would for a large vessel drawing a large amount of water; consequently a caisson has got to be built so that it can be floated out of position at or near about half-tide.

314 Q. 57. When did you first see the caisson-gate at Hunters Point dry dock here in San Francisco?

(Claimant interposes the same objections regarding the Hunters dry dock as heretofore interposed to the Baltimore dry dock.)

A. In 1869.

Q. 58. What is the height of the ebb and flow of the tide at Hunters Point?

A. About six feet; somewhere about six feet.

Q. 59. Will you state, in a few words, how the caisson-gate was constructed and how it operated, as compared with the at Baltimore, that you have just described?

(The same objections by complainant.)

A. The construction of the Hunters Point gate is somewhat different from the Baltimore gate. It is constructed of wood and is made with its

flotation exceedingly low, and its stability is secured by stone ballast, and in the Baltimore caisson they have no ballast, the structure of the caisson being so that the center of buoyancy is high enough up to secure
315 its stability; that is, the center of gravity of that gate is below its center of buoyancy, whereas in the construction of the gate at Hunters Point, by a mistake, the center of buoyancy was very much below the center of gravity, and when they attempted to use it it was a failure; they couldn't use it until they had built stone work inside sufficient to bring the center of gravity in such a position that it would stand upright. Another difference is that the water is admitted to the Hunters Point dock through the side culvert entirely. The dock is not filled through the caisson, as it is at the Baltimore dock.

Q. 60. Was any water ballast used for sinking the caisson at Hunters Point?

A. Yes, sir; the caisson has to be filled with water in order to sink it, just as in the other case.

Q. 61. How is the water admitted into the caisson at Hunters Point after they got the stone fixed so it was practical?

A. It was admitted through the gate at the sides. There is a
316 gate in either side for admitting the water into the interior for sinking purposes, according to which side was near the sea, and an engine and pump for discharging the water.

Q. 62. So far as sinking the caisson now at Hunters Point, after they had got their stone ballast in it, so that it was a practical gate, how did the method of sinking it at the mouth of the dry dock compare with the method of sinking the Baltimore caisson that you have described?

A. The method is the same—simply opening a gate and admitting the water to the interior of the caisson for sinking it. There is no difference.

Q. 63. How did the method of raising that caisson-gate at Mare Island compare with the method of raising the caisson-gate at Baltimore that you have just described?

A. The method of raising it is identically the same. You simply pump the water out until the caisson floats out of position.

Q. 64. How early did they use that caisson-gate at Hunters
317 Point, sinking it automatically by admitting water, as you have described, and raising it by pumping the water out of it as you have described it?

A. They have always used it that way since the construction of the dock.

Q. 65. When was that?

A. I cannot give the date of the construction of the dock at Hunters Point. I think it was in 1886, but I am not very sure about it. I first saw it and had to do with it in 1869.

Q. 66. Was it before 1875?

A. Yes, sir.

Q. 67. What devices and methods were used for opening the culvert gates, if any, at Hunters Point prior to 1875 for admitting water into the empty dock?

A. The culvert gates are opened and closed by screws and a large capstan wheel above.

Q. 68. How do those devices and methods for opening those culvert gates at Hunters Point compare with the devices and methods of opening the gates through the deep keel of the Mare Island caisson?

A. They are the same.

Q. 69. Would it require anything in the shape of invention to
318 apply to the Mare Island caisson the same devices for opening the gates that had been used for so many years before at Hunters Point?

Mr. BOONE. I object to the question on the ground that it is incompetent, as calling for the opinion of the witness on a question of law.

A. No.

Q. 70. What other floating caisson gates had you seen prior to 1880 in which water-ballast was used for sinking them, if any?

Mr. BOONE. I make the same objection to this testimony as has been urged heretofore, that it is incompetent, irrelevant, and immaterial, and that no notice has been given of such testimony, as required by statute.

A. Water is used for sinking all caisson gates, and I have seen a great many of them, both here and in Europe, and in England. I am acquainted with a great many of the dock-gates there. Water is used in the Liverpool docks for sinking the caisson and pumps are used for floating them. In the Graving dock at Glasgow and the Victoria dry
319 dock in Dundee the caisson is operated in the same way, by the water being admitted into the caisson to sink it and being pumped out of it to float it. There are only two methods that I have seen for operating dry dock—the method of sinking the caisson by admitting water into it and floating it by pumping it out, and the old method of lock gates.

Q. 71. How early did you see those caisson-gates so used at Dundee and at Liverpool?

A. As early as 1857 and 1858. That is as early as I remember taking notice of these things. I used to play around them when a child.

Q. 72. What time was it you say that you first saw the Baltimore caisson?

A. In 1883, in the end of July or the beginning of August.

Q. 73. When did you obtain those photographs copies of which have been introduced here in evidence?

A. At that time.

Q. 74. Could you judge by the appearance of the caisson and gates at that time whether they were new and just made, or did they appear to have been in use a long time?

320 A. The Baltimore dock had not been in use very long when I saw it. I couldn't say exactly how long it had been in use, probably one or two years.

Q. 75. Please look at the back part of the book which contains your photograp's of the Baltimore dry dock and state whether you find any report there showing when the construction of the dry dock was made.

Mr. BOONE. I object to that question as incompetent, immaterial, and irrelevant, as heresay, and on the further ground that no notice has been given of any such testimony, as the statute requires.

A. From this report, evidently, the Baltimore dock was completed in October, 1880.

Q. 76. Do you find the caisson that you have described mentioned in that report?

A. Yes, sir.

Q. 77. You have mentioned the Erie dry dock, in New York, having caisson-gates. When did you first see caisson-gates there?

A. At the same time that I saw the Baltimore dry dock; that is, within a week of the time that I examined the Baltimore dock.

321 Q. 78. How many caisson-gates were there at the Erie dry dock?

A. Two.

Q. 79. How were they operated for sinking and raising?

A. Precisely the same as the Baltimore caisson, excepting that in one case they were built of wood and in the Baltimore caisson it is built of iron.

Q. 80. How was the water admitted into the empty dry dock at the Erie dry dock?

(The same objections by complainants.)

A. The water is admitted in the same manner as in the Baltimore dock.

Q. 81. Through the caisson-gate?

A. Yes, sir; and also by side culverts. Either method can be used in filling the dock.

Q. 82. Do you know whether that was an ordinary method and well known to mechanics engaged in that line of structures long prior to 1883?

(Question objected to by complainant as incompetent, irrelevant, and immaterial, and that no proper foundation has been laid showing that the witness is competent to testify on that point.)

322 A. In all the docks that I had examined previous to that time the water was admitted to the dock through the side culvert. Simpson, who is the patentee of the Baltimore dock and of the Erie docks, claimed to me at the time that he had originated this method of filling these docks through the caisson.

Q. 83. My question related only to the sinking and raising of caissons and not to the filling of them.

A. I think you said the admitting of the water into the dock.

Q. 84. Do you know whether the sinking of the caissons automatically by admitting water into them, and raising them by pumping the water out as you have described in the Baltimore dry dock, was the ordinary method, and well known to mechanics all over the world engaged in that line of construction, for sinking and raising caisson gates, long prior to 1880?

(Question objected to by complainant as incompetent, immaterial, and irrelevant, and as leading.)

A. The sinking of the caisson automatically by the admission of water is the only method that I have known in use for that purpose, and
323 it is the usual and has always been the usual method of operating a caisson.

Q. 85. You say "always been;" how far back does your knowledge go?

A. It goes as far back as the first caisson I have seen, and that was at the Victoria dock at Dundee, which was erected in 1853.

Cross-examination of George W. Dickie:

Q. 1. (By Mr. BOONE.) Mr. Dickie, you testified in the case of George F. Schild against the Union Iron Works, which was tried in this court about two years ago, did you not?

A. It must have been more than two years ago. The caisson was delivered to Mare Island in 1884, in October, and I think that case was tried during the construction of the caisson.

A. Yes, I recollect of testifying in that case.

Q. 2. Did you produce the book which you now have before you, and from which the photographs which were taken from it were put in evidence in that trial?

324 A. I think the Union Iron Works produced this same book.

Q. 3. That same book was used in that case?

A. Yes, sir.

Q. 4. Representing this same Baltimore dry dock?

A. Yes, sir.

Q. 5. You testified in that case substantially as you do now, did you not?

A. I believe so.

Q. 6. When did you first see the caisson gate used at the Victoria dock in Dundee?

A. I must have seen that used in 1857.

Q. 7. Where were you born, Mr. Dickie?

A. In Arbroath, Scotland.

Q. 8. Where did you learn your trade?

A. I learned my trade in Burntisland, Scotland.

Q. 9. How old were you when you commenced to learn your trade, Mr. Dickie?

A. Sixteen.

Q. 10. How far is this place Arbroath, where you were born, from Dundee?

A. Twelve miles.

325 Q. 11. How old were you when you first saw the caisson gate at the Victoria dock at Dundee?

A. I was about thirteen years old, I think. I used to run around that dock.

Q. 12. Are you sure you were thirteen years old?

A. I might not have been sure then, but I think I am sure now. That must have been my age then.

Q. 13. Please figure it up and see if you were thirteen years old then.

A. I was born in 1844, and thirteen would be 1857.

Q. 14. When did you examine the caisson gate at Baltimore?

A. Some time near the end of July or the beginning of August, in 1883; I can not give the exact date.

Q. 15. What was the occasion of your making an examination?

A. I was shown that dock by Mr. Simpson, who was very anxious at the time to build a dock for us, and he was very careful to show us all the nice points about his dock, and amongst other things the method of admitting water into the dock through the caisson.

326 Q. 16. Whom do you mean by "us?"

A. The Union Iron Works.

Q. 17. How deep was the floating-body or vessel of that gate?

A. What you might term the floating-body or hull extended to the sill of the dock. It was made with a sharp bilge just like the bottom of a yacht, a sharp bottom; so, actually the floating-body extended down to the keel proper, which entered the recess of the dock.

Q. 18. How deep was the keel that went around the bottom of the vessel that fitted into the groove in the bottom of the dock?

A. I couldn't exactly say, but it was somewhere about eighteen inches.

Q. 19. A uniform width entirely around the bottom of the vessel?

A. Yes, sir; the keel part of the bottom would be the same as the under part, which extended up the sides.

Q. 20. How is it with the one at Hunter's Point?

A. The one at Hunter's Point is the reverse of the one at the Baltimore dock. The Hunter's Point caisson is largest at the very bottom,
327 instead of having a sharp bilge. The width across the actual bottom of the caisson is the widest part of it.

Q. 21. How far down does the body extend in that caisson?

A. It extends to the bottom of the dock.

Q. 22. How is it with the gates in the docks of the Erie basin docks?

A. They are constructed very much similar to the Baltimore dock, although not quite so sharp in the bottom. In that, the flotation—the buoyancy—or rather the center of buoyancy, as we call it, might be slightly lower in the caissons at the Erie docks than in the caisson at the Baltimore dock. That is all fixed by the conditions of the tide. The rise and fall of the tide fixes the center of buoyancy of a caisson, if the caisson is constructed scientifically.

Q. 23. I believe you stated that you were superintendent of the Union Iron Works at the time the Mare Island caisson was built; is that correct?

A. Yes, sir.

Q. 24. It was built under a contract, was it?

A. Yes, sir.

Q. 25. Contract with whom?

328 A. With the United States, or rather the contract was with Admiral Nicholls, Chief of the Bureau of *the* Yards and Docks.

Q. 26. Who furnished the plans and specifications for building that gate?

A. The plans and specifications were furnished by the Department of Yards and Docks.

Q. 27. Had you any talk with the complainant in this case, Mr. George F. Schild, during the time that you were building that gate?

A. I think not. I think not; although I wouldn't be certain about that. My first acquaintance with Mr. Schild was when he made his claim of infringement.

Q. 28. When was that?

A. I think that must have been after the delivery of the caisson at Mare Island.

Q. 29. When did Mr. Schild first make a claim to you, or to the Union Iron Works, that the gate at Mare Island was an infringement upon his patent?

A. I think that we received a letter from Mr. Schild, although
329 I have no recollection of having had any talk or conversation with Mr. Schild; I think we received a notification from him that the

caisson we were building infringed on a patent that he had. That must have been somewhere about June or July of 1884. I know that it was while the construction was in progress, although I could not say just the exact conditions of things then; but it must have been between July and August, and the caisson was finished in October.

Q. 30. What steps did you take to determine that question, of whether it was an infringement or not, if any?

A. We took no steps.

Q. 31. Did you investigate the matter at all?

A. We didn't consider that it was a matter that we had anything to do with, and knowing, as we did, the circumstances attending the getting up of the plans, we did not consider that there was anything in it.

Q. 32. So you went right ahead and did it, and paid no attention whatever to the claim?

A. Certainly.

330 Q. 33. And then you did not see Mr. Schild or talk to him until after the gate was finished and placed at Mare Island?

A. I have no recollection of seeing and talking with Schild before that.

Q. 34. Did you, or the Union Iron Works, at any time authorize Mr. Wheaton, as the attorney of the Union Iron Works, to make any offer or proposition to Mr. Schild looking towards a compromise or settlement of the question of liability for infringement?

A. That I cannot say. The making of offers of money is not in my department at the Union Iron Works. Such a thing might have been done, because such a thing is used rather than have any litigation. We do not consider what is right and what is wrong in that case; it is a matter of which is easiest or cheapest.

Q. 35. I asked you whether you did or not?

A. I cannot say whether such a thing was done or not. I cannot say. It is not in my department.

GEORGE W. DICKIE.

331 *Deposition of George F. Schild.*

Re-examination of George F. Schild on behalf of complainant.

Q. 1. (By Mr. BOONE.) Have you any further statement to make, Mr. Schild, than what you made the other day when you were a witness in this case regarding the testimony which you then gave?

A. I think there is a difference in regard to this offer that I received from the Union Iron Works between me and Mr. Dickie. Mr. Dickie thinks I notified him during the construction of this caisson. The day the contract was closed between Admiral Nicholls and the Union Iron Works, the same day the contract was closed, I notified the Union Iron Works that they would infringe in case they would build that caisson, in my opinion, and I have the dates, too.

Mr. WHEATON. I object to oral testimony of the contents of the letter mentioned, and call for the letter itself or a copy.

Q. 2. (By Mr. BOONE.) What is the date of that letter, Mr. Schild?

332 A. (Referring to memorandum.) That date was April 28th, 1883. The Union Iron Works asked me then to send them the specifications of my patent, and I sent the specifications on May 1st, 1883.

On May 2nd Commodore Russell and Civil Engineer C. C. Wolcott went down to San Francisco to have a consultation with the Union Iron Works in regard to this matter, and on May 3rd, 1883, Mr. Wheaton came up to the navy yard at Mare Island to see me. He told me that the Union Iron Works were very anxious to commence the work——

Mr. WHEATON (interrupting). We object to all testimony as to what passed between myself and Mr. Schild, on the ground that it is between third parties; the Union Iron Works, for whom I was acting at that time, are not a party to this suit. The defendants in this case are not bound by any offers of compromise which the Union Iron Works chose to make.

The WITNESS (continuing). And wanted my permission to do so. I told him that I had written to the Secretary of the Navy, and that
333 I didn't like to make any agreement before I had an answer. On May 16th, Mr. Wheaton wrote me that the Union Iron Works were willing——

Mr. WHEATON (interrupting). I object to his telling what was in any letter that I wrote.

Q. 3. (By Mr. BOONE). Where is that letter?

A. You must have that letter in your office.

Mr. BOONE. Then we will produce the letter.

The WITNESS. On May 20th—I didn't answer this letter, and on May 20th Mr. Wheaton came up again to Vallejo and increased the offer. As I had not received any answer to my letter to the Secretary of the Navy, I would make no compromise, and Mr. Wheaton begged me to go down with him to San Francisco and see the managers of the Union Iron Works. I did so, but we could not come to an agreement.

Q. 4. You stated the other day something about a proposition which you made to the Union Iron Works. Now, what was that proposition?

334 A. The proposition was, that is the Union Iron Works, would use my plans that I had prepared for the caisson-gate at the navy yard at Mare Island and not the one that was sent out from the Bureau of Yards and Docks, I would give them the permission to build it.

Q. 5. Did they accept that proposition?

A. They did not.

Q. 6. Had you any special object in using your plans instead of those which were sent by the Government?

A. As I had taken out a patent for a caisson gate certainly I wanted that caisson constructed as near to the patent as possible.

Q. 7. You say they did not accept?

A. No, sir.

Q. 8. Did you ever give them any authority to build the gate up at Mare Island?

A. Never.

Q. 9. (By Mr. WHEATON.) How could you have sent the Union Iron Works a copy of the specifications of your patent in May, 1883, when the patent itself was not issued until October, 1883?

335 A. Well, I will take it back; all those dates I gave was 1884; 1884 was all the dates I gave instead of 1883.

Q. 10. Then in every instance where you have said 1883 in the testimony you have just just given should have been 1884?

A. Yes, sir.

(Examination continued, in conformity with agreement of counsel, until Saturday, August 25th, 1888, at half past ten o'clock, a. m.)

Deposition of Christopher Wolcott.

MONDAY, *August 27th*, 1888.

Present: Mr. Boone, of counsel for complainant; Mr. Carey, United States Attorney, and Mr. Wheaton, of counsel for respondents.

Re-examination of Christopher Wolcott on behalf of respondents.

(It is stipulated and agreed by both complainant and respondents as a fact that the dry-dock caissons at Baltimore, about which Mr. Dickie testified, were finished and in operation as early as 1882.)

336 Q. 1. (By Mr. CAREY.) Have you prepared a model of the caisson gate in use at Mare Island, Mr. Wolcott?

A. I have.

Q. 2. Describe it, as near as you can, so that we will know whether the one you send us is the one you have prepared.

A. It is made of brass, and follows the drawings from which the caisson now in use at Mare Island itself was constructed, except that it leaves off portions of the plating on either end so as to exhibit the interior of the floating body of the caisson. It has four gates on it, and four openings without gates to show the openings through the keel.

Q. 3. Has the model all of the openings that appear in the caisson gate now in use at Mare Island?

A. It has all of them, except, perhaps the discharge from the pump; that may not be shown, because the plating does not come that far along on the body on either side.

Q. 4. That is the pump that you use to discharge the ballast water?

A. Yes, sir.

337 Q. 5. What details are not exhibited on the outside appearance, if any?

A. The beams which extend up and down to support the floating keel, the hanging keel, are not on. It is simply a plain plate, and the two-deck houses on either side are not on; the capstan and the rigging about the deck are not on, and I think that is all that is not on the model that is on the caisson in use up there—and the rubber gasket is not on.

Q. 6. Is the machinery for operating the gates in the keel on the model?

A. No, sir; they are simply shown.

Q. 7. How are they operated?

A. They are operated by a large key-wrench on the deck, and men walk around them, the same as I have testified.

Q. 8. The shape of the bottom of the hull, or the floating body, is exactly the same in the model as in the caisson in use at Mare Island?

A. It is.

Q. 9. And is the same as to the exterior mechanism of the floating body, showing the number of decks and compartments?

A. Yes, sir.

338 Q. 10. Describe the size, and give a general description of the model prepared by you, of the Mare Island caisson.

A. It is made on the scale of a quarter of an inch to the foot, I think, and a quarter of eighty would be in the neighborhood of twenty-seven or thirty inches, which is the length of the model over all on the upper deck. In depth it is about eleven inches in the deepest part, over all; that is, from the top deck to the bottom of the floating keel. It is in the neighborhood of four inches wide on the top upper deck. The floating body is about five inches deep, may be more, and may be less. The keel would be about six inches deep. The keel on the original machine is thirty-three feet and three inches deep; the keel itself is seventeen feet and three inches from the bottom of the floating body to the bottom of the keel. On half of one side along its length is a sheet of brass to represent the plating of the floating body, and the other half is left off to show
339 the interior construction, and the same is true of the opposite side, the reverse. The model has the upper deck and the between-decks, and the pump, and it has the balancing tanks at the two ends. It has holes through the bottom to represent the openings by means of which the water it admitted to the ballast space on either side. It has pieces to represent the fall of the pipe and the gate which controls the flow of water through these pipes. It has the two openings without the hoods, and without the hatchways through the upper deck. It has the two openings on the between-decks by which means access is had to the ballast spaces. It has the valve rods which run up from the gates, which control the flow of the water into the ballast spaces and the between-decks. It has representations for the rods which control the four gates which pass up to the between-decks. It has no rubber gasket on it. I think that is all. It may perhaps have—but I am not certain whether it
340 has—an opening showing the discharge through the side from the pump which lifts the ballast out of the ballast tank, as the plating I don't think went far enough to admit of its being shown, still it may have it, I am not certain on that point.

Q. 11. Do you have a pump on board of the caisson in use at Mare Island for the purpose of pumping out the ballast water?

A. Yes, sir.

Q. 12. Are the parts and portions of the model which you have described constructed and arranged in the same manner as the corresponding parts and portions are arranged and constructed in the machine in use at Mare Island?

A. They are. I want to say another thing, that the sump is shown underneath the bottom of the floating body as it appears on the caisson at Mare Island.

Stipulation as to model, &c.

It is stipulated by and between counsel for the respective parties hereto, that if the model above referred to corresponds with the description given of it by the witness Wolcott, that it may be taken and used as an
341 exhibit herein, and that if counsel for complainant desires to cross-examine the witness after seeing the model, the witness Wolcott will reappear before the examiner at any time before the hearing for cross-examination.

Mr. CAREY. I will now state that respondents here close their testimony.

Certificate to depositions.

I certify that the foregoing depositions were taken at the place stated in the caption to said depositions, at the several times set forth in said depositions, in my presence, and in the presence of counsel for the respective parties to the cause in said caption entitled; that, previous to giving his testimony, each of the witnesses in said depositions named was by me duly sworn to tell the truth, the whole truth, and nothing but the truth, in said cause; that said depositions were, except in so far as they were taken down in writing by the examiner, taken down in shorthand writing and transcribed by me, pursuant to stipulation and agreement of
342 counsel; that said depositions, after being so transcribed, were read by, or by me to, the said witnesses, and signed by them, respectively, except in those cases where such reading and signing were, by agreement of said counsel, waived, as in said depositions set forth; and that I have retained said depositions for the purpose of delivering the same with my own hand to the court for which they were taken.

Accompanying said depositions, and forming part thereof, are the several exhibits introduced in connection therewith, and referred to and specified therein.

I further certify that I am not attorney nor of counsel for any of the parties to said cause, nor in any way interested in the event thereof.

In witness whereof, I have hereunto set my hand, this 27th day of November, A. D. 1888.

A. L. COOMBS,
Special Examiner in Chancery U. S. Circuit Court, Dist. of Cal.

343 (Endorsed:) Opened by order of court and refiled Nov. 28, 1888. L. S. B. Sawyer, clerk.

(Here follows diagrams marked pp. 344, 345, 346 and 347.)

348 *Complainants' Exhibit A.*

UNITED STATES PATENT OFFICE.

GEORGE F. SCHILD, OF VALLEJO, CALIFORNIA.

CAISSON-GATE.

Specification forming part of Letters Patent No. 287,178, dated October 23, 1883.

Application filed March 31, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. SCHILD, of Vallejo, county of Solano, State of California, have invented an Improvement in Caisson-Gates; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to an improved caisson or floating gate for harbors, canals, river-locks, deep-water basins, and the different kinds of dry-docks.

My invention consists in a gate formed of a plate shaped like and adapted to fit the entrance of the locks, harbors, or docks; in a peculiar boat-like structure or buoy connected with it to keep it afloat and upright, and in means for sinking or floating said gate and buoy, consisting of certain water-tanks and peculiar valves, all of which will hereinafter fully appear.

The gates which are ordinarily used consist of two leaves swinging on pivots below and in straps above water. A great amount of mechanical force is required to operate them. This causes constant wear and tear of the gates, as well as of the side walls and the bottoms of the chambers. Repairs, as a consequence, are very costly and make necessary the use of coffer-dams. The caisson-gates which are generally used are boat-like floating structures the keel and stems of which fit into grooves at the entrance of harbors and docks, and prevent the water from flowing either in or out. These caisson-gates, built of either wood or iron, are very heavy and clumsy, requiring a great amount of stationary ballast to keep them in an upright position and pumps to operate them.

The object of my invention is to provide a floating gate or caisson-gate which will be light and easily handled, requiring no stationary ballast to lower it and keep it steady, and no pumps to raise it.

Referring to the accompanying drawings, Figure 1, Sheet 1, is a plan of a canal-lock with caisson-gate in position, closing the lock, the dotted lines indicating the place of caisson-gates when out of such position. Fig. 2 is an elevation of same. Fig. 3 is a plan of a dry-dock having the floating gate or caisson-gate in position across the entrance. Fig. 4 is an elevation of same. Fig. 5, Sheet 2, is an elevation and longitudinal section of my floating or caisson-gate. Fig. 6, Sheet 3, is a midship cross-section of same. Figs. 7 and 8 represent the half-plans of the three decks, the upper deck, the between-decks, and the lower deck, respectively. Fig. 9 is a section through a square inlet valved opening, H, in the lower deck, showing, in elevation, the means for working the same. Fig. 10 is a horizontal section through one wicket-gate, G. Fig. 11 is an elevation of the wicket-gates G G'. Fig. 12 is a vertical section through the wicket-gates. Fig. 13 is a vertical section through the hoisting apparatus of the wicket-gates.

In the figures on Sheet 1 I show the application of my device to the purpose for which it is intended in order to clearly understand the manner of its operation.

In Figs. 1 and 2, L represents the lock, and K the canal. A B is the caisson-gate. (Shown across the entrance of the lock by firm lines, and swung around to open the entrance by dotted lines.) It is held against the entrance by being pressed up against shoulders *i* made therein.

In Figs. 3 and 4, R is a river, and Q the dock. In Fig. 4 the caisson is shown by dotted lines to have been floated away to open the entrance to the dock.

In Fig. 5, Sheet 2, A is the gate-plate. It is constructed of iron sheets *a a*, running vertically, and connected and stiffened by I-beams *b b* on each side. Around the edges of plate A are fastened on either side, by channel-irons a^2, a wooden piece, a', which extends the whole length of the structure, and fits against the shoulders *i* at the entrance of the dock. This plate is made of the same shape as the entrance, so as to effectually close it when lying across it.

B represents the floating body or buoy, constructed like a vessel, and having the three decks C D E, as shown in Fig. 5. Under the lower deck, E, is an air space or chamber, *e*, Fig. 6, Sheet 3. The shape of the bottom of this body is seen better in Figs. 6 and 9, Sheet 3. By not being flat it can have greater buoyancy with less bulk. The gate-plate A is properly secured to the body, so that the whole caisson-gate has the appearance of a vessel having an exceedingly deep keel. This construc-
349 tion of plate and body makes a device in which are united the results of the ordinary gates, and of the vessel-shaped caissons, being at the same time superior to both, as it produces a light and easily-handled device, one which can be operated to a better advantage than the ordinary gates, and is less clumsy than the usual caissons.

The means I use for handling or operating my device are as follows:

Upon each end of the body B, with their bases a little higher than the deck D, are situated water-tanks F, having in their bottoms outlets *f*, which may be suitably regulated by valves or cocks K. These water-tanks are high enough to keep their outlets above the surface of the water at any stage of the tide, and even when the device has been sunk to its limit, with the bottom of plate A resting on the bottom of the dock-entrance, so that by opening these outlets the contents of the water-tanks may escape. The floating-line W (seen in Fig. 6, Sheet 3) is a few inches below the lower deck, E. On a line with this deck E are four square valved openings, H H, two on each side. To sink the caisson-gate, water from suitable extraneous hydrants is allowed to flow into the water-tanks F. These hold enough to sink the caisson-gate so that its valved openings H are depressed below the level of the water which enters through the said valves, and, resting on the lower deck, E, soon sinks the caisson-gate until it rests upon the bottom of the dock-entrance. The valves to the openings H are closed after the water entering the same has by its pressure forced the gate down, they giving stability to the gate by retaining the water upon deck E in case of a fall of tide below its level or during a storm, the operating-levers of the valves being placed upon the upper deck in order to be accessible when the valves are submerged. To raise the caisson-gate again, open the outlets *f*, which, being above the level of the water, will allow the water which was confined in tanks F to run out into the other water on deck E. The device will then by its own buoyancy begin to rise while the water flows out through the valved openings H. By having the tanks F one at each end, the caisson-gate may be kept properly balanced, the railing being provided with water-levels for this purpose. When the caisson-gate is sunk, in order to fill the dock with water, I have the openings G′, through the gate-plate A. These openings are covered by sliding wicket-gates G, one being on each side. By operating these gates, the water may be admitted to or excluded from the dock.

In Fig. 10, Sheet 3, I show the mechanism by which I operate the square valved openings H H. These valved openings consist of the frame *p*, riveted by means of flanges to the outside and deck plating, the valve or cover *r*, which is hinged to the upper part of the frame *p*, and has grooves for rubber packing, and a toothed quadrant, *q*, fastened to the back of the cover. This quadrant meshes with a worm-gear, *s*, keyed to a perpendicular spindle, *u*, resting in a tripod or step, *t*, on the lower deck, E. This spindle *u*, as seen in Fig. 6, reaches through the deck D, and has a hand-wheel, *v*, by which the valve may be opened or shut.

The wicket-gates G are double (Figs. 11 and 13, Sheet 4), one on each side of the plate A. These slide in guide-frames *g g*, and are arranged one to go up and the other to go down, to uncover the opening G′. It is necessary to have a gate on each side in order to resist the pressure of the water, no matter from which side it may be.

The means for operating these gates are shown in Fig. 14. Attached to each gate are rods *w*. These enter the body B through pipes Y, Fig. 13, provided with stuffing-boxes, and reach to the between-decks, where they are connected by keys *y* with racks *z*. These racks mesh with a pinion, Z, mounted in a frame, O. By this arrangement the wicket-gates opposite each other are counterpoised, and by turning the pinions Z by a crank one gate slides down while the other moves upward.

The same principle as herein explained may be followed in floating gates for locks or rivers and canals instead of those now in use. A much less draft being required when used for rivers and canals, one deck can be dispensed with, the number of wicket-gates may be increased, and the hoisting apparatus of the same placed on the upper deck.

The advantages this caisson-gate has are as follows: It requires neither pivots nor straps. It can be operated easily. The construction of the lock-chamber is simplified, requiring only shoulders or grooves for the gate and a recess to float the gate into while vessels are passing. The gate may be built where most convenient and floated to its destination. The lock can be filled through the numerous wicket-gates in a short time.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A caisson or floating gate consisting of the plate A, having its bottom and ends shaped like and adapted to fit the entrance of the dock, lock, or harbor, the buoy or floating vessel or body B, secured to the top of the plate, the water-tanks F on each end of the body, and having outlets *f* above the surface of the water, and suitable valved openings in said body near the water-line, to admit water when the caisson is depressed by the full tanks, and to allow its escape when the tanks are drained through the outlets, substantially as herein described.

2. A caisson or floating gate consisting of the plate A, having its bottom and ends shaped like and adapted to fit the entrance of the dock, lock, or harbor, the buoy or floating vessel or body B, having the lower water-deck, E, an air-chamber, *e*, under said deck, and valved openings H H on a line with said deck, and the water-tanks F on each end of the body, said tanks having outlets *f* above the surface of the water, substantially as herein described.

3. A caisson or a floating gate consisting of the plate A, for closing the entrance of the dock, lock, or harbor, the buoy or floating vessel B, having the lower water-deck, E, an air-chamber under said deck, valved openings H H, on a line with said deck, and means for closing said valved openings, consisting of the frame *p*, swinging cover *r*, toothed quadrant *q*, worm-gear *s*, and spindle *u*, substantially as herein shown and described.

4. In a caisson or floating gate, the plate A, having its bottom and ends shaped like and adapted to fit the entrance of the dock, lock, or harbor, and the body B, for floating and sinking said plate, in combination with the double wicket-gate G, covering on each side openings G′ in said plate, and means for operating said gates, substantially as herein described.

5. In a caisson or floating gate, the plate A and floating body B, in combination with the wicket-gates G on each side of openings G′ in said plate, and the means for operating said gates, consisting of the rods *w*, pipes Y, racks *z*, and pinion Z, all arranged and operating substantially as herein described.

In witness whereof I hereunto set my hand.

GEORGE F. SCHILD.

Witnesses:
H. F. MALLETT,
GEO. W. SIMONTON.

(Endorsed:) Filed Nov. 28, 1888. L. S. B. Sawyer, clerk.

351 *Complainants' Exhibit D.*—S. C. H., Examiner.

U. S. circuit court, N. Dist. of Cal.

SCHILD
vs.
BELKNAP.

United States of America. Circuit court of the United States, ninth judicial circuit, northern district of California.

GEORGE F. SCHILD
vs.
THE UNION IRON WORKS ET AL. } No. 3990.

This cause having come on regularly for trial on the 26th day of August, 1886, being a day in the July, 1886, term of said court, before the court, Honorable George M. Sabin, U. S. district judge for the district of Nevada, assigned to hold, and holding said circuit court, and a jury of twelve men duly impaneled, J. L. Boone and J. J. Scrivner, esqs., appearing on behalf of plaintiff, and M. A. Wheaton, esq., on behalf of the defendant, the Union Iron Works, and the trial having been proceeded with on the 31st day of said August and on the 1st day of September of said term and year, and witnesses on the part of the plaintiff and of the defendant having been sworn and examined, and the evidence, oral and documentary, on behalf of the respective parties having been introduced and closed and the cause, after arguments of counsel and the instructions of the court having been submitted to the jury, and the jury having subsequently rendered the following verdict: "We, the jury, find in favor of plaintiff, and assess the damages at one dollar," and the court having ordered that judgment be entered herein in accordance with said verdict and for costs.

Now, therefore, by virtue of the law and by reason of the premises aforesaid, it is considered by the court that George F. Schild, plaintiff, do have and recover of and from the Union Iron Works, defendant, the sum of one dollar damages, and his costs in this behalf expended, taxed at $44.25–100.

Judgment entered, September 1, 1886.

L. S. B. SAWYER, *Clerk.*

(On the margin:) Satisfied. (See mem. of costs.)

I, L. S. B. Sawyer, clerk of the circuit court of the United States for the northern district of California, do hereby certify the foregoing to be a full, true, and correct copy of an original judgment entered September 1, 1886, in the therein-entitled cause.

Attest my hand and seal of said circuit court this 8th day of October, 1886.

L. S. B. SAWYER, *Clerk.*
[SEAL.] By F. D. MONCKTON, *Deputy Clerk.*

(Endorsed:) Filed Nov. 28, 1888. L. S. B. Sawyer, clerk. By F. D. Monckton, deputy clerk.

352 *Order allowing appeal.*

At a stated term, to wit, the July term, A. D. 1890, of the circuit court of the United States of America, of the ninth judicial circuit, in and for the northern district of California, held at the court room in the city and county of San Francisco, on Friday, the 31st day of October, in the year of our Lord one thousand eight hundred and ninety.

Present: Honorable Thomas P. Hawley, United States district judge, district of Nevada.

GEORGE F. SCHILD
vs.
GEORGE E. BELKNAP ET AL. } No. 4161.

On motion of John T. Corey, esq., United States attorney, J. H. Miller, esq., of counsel for complainant, having been heard in opposition thereto, it is ordered that an appeal to the Supreme Court of the United States from the decree heretofore filed and entered herein be and the
353 same hereby is allowed, without security for damages or costs, and that a certified transcript of the record, testimony, exhibits, and all proceedings herein, be forthwith transmitted to the Supreme Court of the United States. It is further ordered that all proceedings on said decree be and they hereby are stayed pending said appeal.

354 *Order allowing certain original exhibits to be transmitted to U. S. Supreme Court.*

In the circuit court of the United States in and for the northern district of California.

GEORGE F. SCHILD, COMPLAINANT,
vs.
GEORGE E. BELKNAP ET AL., RESPONDENTS. } No. 4161.

It appearing to the court that respondents' Exhibit 2 is a blue print, and certain lines thereof are so dimly printed that the tracing of the same would be impracticable, and that respondents' Exhibits 3 to 17, inclusive, are photographs and respondents' exhibit 1 and complainant's Exhibits B and C are models, and are all proper for the inspection by the justices of the Supreme Court of the United States.

It is, therefore, on motion of Charles A. Garter, esquire, United States attorney for the northern district of California, ordered that said
355 enumerated exhibits, to wit, respondents' Exhibits 2 to 17, inclusive, and respondents' Exhibit 1, and complainant's Exhibits B and C, and the originals thereof, be transmitted to the Supreme Court of the United States as a part of the transcript on appeal in the above-entitled suit; the same to be returned to the files of this court upon the final disposition of the suit in the said Supreme Court.

HAWLEY, *Judge.*

April 21st, 1891.

(Endorsed:) Filed April 24, 1891. L. S. B. Sawyer, clerk; by F. D. Monckton, deputy clerk.

356 In the circuit court of the United States of America of the ninth judicial circuit in and for the northern district of California.

GEORGE F. SCHILD
vs.
GEORGE E. BELKNAP ET AL. } N. 4161.

I, L. S. B. Sawyer, clerk of the circuit court of the United States of America of the ninth judicial circuit in and for the northern district of California, do hereby certify the foregoing three hundred fifty-five written and printed pages, numbered from 1 to 355, inclusive, to be a full, true, and correct copy of the record and of all proceedings in the above and therein entitled cause (excepting therefrom certain original exhibits, to wit, complainant's exhibits B and C, both models; respondents' Exhibit 1, a model; respondents' Exhibit No. 2, a diagram, and respondents' Exhibits 3 to 17, inclusive; photographs, which are by order of
357 court transmitted herewith), and that the same, together with said original exhibits, constitute the transcripts of the record on appeal to the Supreme Court of the United States.

Attest my hand and the seal of said circuit court this 24th day of April, A. D. 1891.

[SEAL.] L. S. B. SAWYER, *Clerk.*

358 UNITED STATES OF AMERICA, *ss:*

To George F. Schild, greeting:

You are hereby cited and admonished to be and appear at the Supreme Court of the United States, to be held at the city of Washington, in the District of Columbia, on the 17th day of June, A.D. 1891, pursuant to an order made and entered by the circuit court of the United States of America of the ninth judicial circuit, in and for the northern district of California, October 31, 1890, allowing an appeal to said Supreme Court of the United States from the final decree of said circuit court, heretofore filed and entered in the suit, wherein George E. Belknap, Joseph Feaster, C. C. Wolcott, and Jessie Diamond are respondents and appellants and you are complainant and appellee, to show cause, if any there be, why the decree in the said order mentioned should not be corrected and speedy justice should not be done to the parties in that behalf.

Witness the Honorable Thomas P. Hawley, United States district judge, district of Nevada, assigned to hold and holding the United States circuit court for the northern district of California, this 20th day of April, A.D. 1891, and of the Independence of the United States the one hundred and 115th.

THOMAS P. HAWLEY,
United States District Judge, District of Nevada.

359 SAN FRANCISCO, CALIFORNIA.

I hereby acknowledge a copy of the within citation to have been delivered to me this 21st day of April, 1891.

JNO. L. BOONE,
Solicitor for Complainant and Appellee.

(Indorsed:) No. 4161. In the Supreme Court of the United States. George E. Belknap et al., respondents and appellants, vs. George F. Schild, complainant and appellee. Citation filed April 21, 1891. L. S. B. Sawyer, clerk, U. S. circuit court, nor. dist. Cal.

(Indorsement on cover:) No. 165. 14642. George E. Belknap, Joseph Feaster, C. C. Wolcott, and Jesse Diamond, appellants, vs. George F. Schild. N. California, C. C. U. S. Filed May 16, 1891.

Office Supreme Court, U. S.
FILED.
JAN 11 1895
JAMES H. McKENNEY,
CLERK.

In the Supreme Court of the United States.

OCTOBER TERM, 1894.

GEORGE E. BELKNAP, JOSEPH FEASTER, C. C. Wolcott, and Jesse Diamond, appellants,
v.
GEORGE SCHILD.
No. 165.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE NORTHERN DISTRICT OF CALIFORNIA.

BRIEF FOR APPELLANTS.

In the Supreme Court of the United States.

OCTOBER TERM, 1894.

GEORGE E. BELKNAP, JOSEPH FEASTER, C. C. Wolcott, and Jesse Diamond, appellants, v. GEORGE SCHILD. } No. 165.

APPEAL FROM THE CIRCUIT COURT OF THE UNITED STATES FOR THE NORTHERN DISTRICT OF CALIFORNIA.

BRIEF FOR APPELLANTS.

This is an appeal from a final decree of the circuit court of the United States entered October 31, 1890, on a bill in equity filed in said court January 20, 1887, charging that the complainant was the original and first inventor of a certain new and useful improvement in caisson gates; that letters patent for said invention were granted to him on October 23, 1883.

That respondents, having full knowledge of the premises, and in violation of complainant's exclusive right and privilege, and without license from com-

plainant, manufactured and used, and still continue to use in the said State of California caisson gates, such as are described and claimed in said letters patent and so secured to your orator. That the caisson gates made and used by the respondents are infringements of said letters patent, and were made according to the invention therein described and thereby protected and secured to your orator. * * * That respondents in this action intend to continue to infringe upon said letters patent and to unlawfully use said invention as they have already been doing. * * * That he will be subject to great and irreparable injury unless he shall obtain from your honors the relief hereby sought.

The bill prays that—

> The said respondents may answer the premises and may be decreed to account for and pay over to your orator all such gains and profits as have or might have accrued to them from purchasing, or making, or using such improved caisson gates.

And also that the court will—

> Cause to be assessed the damages which he has sustained by reason of the premises and the infringements herein complained of, and that the respondents be decreed to pay the damages so assessed in addition to the gains and profits.

The bill also prays an injunction, which was awarded.

To this bill the defendants filed a plea to the jurisdiction of the court, and also a plea in abatement, in which they set forth and allege that George E. Belknap was, and is, a commodore in the United States Navy, and since 15th of June, 1886, has been commandant of the United States Navy-Yard at Mare Island, in California; that C. C. Wolcott was, and is, a civil engineer in the United

States Navy; that Joseph Feaster is, and was, an assistant naval constructor in the United States Navy; and that Jesse Diamond is, and was, an employee of the United States at Mare Island.

> That the only caisson gate that these defendants, or either of them, has any relation with, control over, or use within the State of California is a certain caisson gate constructed, manufactured, controlled, and used by the Government of the United States at the said United States Navy-Yard at Mare Island, in the State of California. * * * That the defendants herein did not manufacture, construct, make, nor build the said caisson gate, or any caisson gate, nor did either of them. That said defendants have not used said caisson gate for their, or either of their, use or benefit, and have only operated and used the said caisson gate at the Mare Island Navy-Yard of the United States as the officers, servants, and employees of the United States in the naval service thereof, and by directions of the Secretary of the Navy of the United States (pp. 5 and 6, Rec.).

The defendants, on the 11th of June, 1888, filed their answer to said bill, in which they deny all the material allegations of the bill, and set up affirmatively the matters hereinbefore recited from their pleas in abatement and to the jurisdiction of the court. On the 24th of June, 1889, the court, by an interlocutory decree, held the letters patent of complainant to be—

> Good and valid in law; that the defendants have infringed upon the said letters patent by making and using one or more caisson gates containing the invention and improvements covered and protected by the first and fourth claims of said letters patent as charged in the bill of complaint herein.

It referred the cause to a master in chancery to take—

> An account of the number of caisson gates made and used, or made or used by the defendants, or either of them; and also the gains, profits, and advantages which the said defendants, or either of them, have received, or which have arisen or accrued to them, or either of them, since the 23d of October, 1883, from infringing the said exclusive right of the said complainant by the making and using of the said improvement patented in the first and fourth claims of said letters patent No. 287178; and also the damages which said complainant has sustained by reason of said infringement.

The master returned his report (pp. 18–20), in which he says, *inter alia:*

> It is therefore considered that upon the proof made the measure of damages herein should be limited to the difference in cost between the infringing caisson gate as constructed and any other available style of gates which the evidence shows would have answered the respondent's purpose, and which they were at liberty to build.

And he concludes:

> I therefore find and do report that one caisson gate was made and used by the respondents; that the gains, profits, and advantages which have accrued to them since the 23d day of October, 1883, from infringing the exclusive right of complainant by the making and using of the improvement patented in the first and fourth claims of complainant's letters patent No. 287178 amount to $40,000, and that no damages in addition to said gains, profits, and advantages have been proved.

On this report the final decree complained of was made and entered against these defendants for $40,000, with interest at the rate of 7 per cent per annum from the 27th of October, 1890; and for the further sum of $448.55, costs, etc.

ARGUMENT.

The court should have dismissed this bill when it became apparent from the evidence—

I. THAT THE CAISSON GATE, IN WHICH IT WAS ALLEGED THAT COMPLAINANT'S PATENTED INVENTION WAS EMPLOYED, WAS THE PROPERTY OF THE UNITED STATES, AND HAD BEEN CONSTRUCTED BY THE UNITED STATES AND WAS IN THE CONTROL OF ITS OFFICERS AND AGENTS, AND WAS AND HAD BEEN USED ONLY FOR THE PUBLIC PURPOSES OF THE UNITED STATES BY ITS OFFICERS AND AGENTS.

II. THAT THE INJUNCTION AWARDED AGAINST THESE DEFENDANTS COULD OPERATE AGAINST THEM ONLY AS OFFICERS AND AGENTS OF THE UNITED STATES TO RESTRAIN THEM FROM THE PERFORMANCE OF THEIR OFFICIAL DUTY IN DIRECTING, CONDUCTING, AND OPERATING INSTRUMENTALITIES OF THE GOVERNMENT, WHICH WERE NECESSARY TO THE DISCHARGE OF ITS FUNCTIONS AND TO THE MAINTENANCE AND PRESERVATION OF PUBLIC INTERESTS.

That these facts were made apparent by the evidence can not be denied.

The defendants did not make, build, or construct the caisson gate in question.

The complainant himself, in his deposition (q. 57, p. 34), proves this. The caisson gate was built by the Union Iron Works of San Francisco, and this complainant sued that company for the infringement of his patent in so building, and recovered one dollar damages. (See, too, qq. 58, 60, 62, and pp. 35, 36 of complainant's deposition.)

The only relation which defendants bore to the caisson gate was that of Government officers, charged with its custody and control.

Of the defendants, the only one who testifies here is Mr. Wolcott, who was the civil engineer. He testifies (pp. 57 *et seq.*) that neither of the defendants built or assisted in building any caissons since October 23, 1883; that Admiral George E. Belknap had nothing to do with the caisson gate *at any time;* that he was not at the navy-yard at all; that he gave general orders to operate the dock, which would comprise using the caisson in docking and undocking vessels and keeping it in repair; that he was simply commandant of the navy-yard, but was not at Mare Island until after the caisson gate had been finished and delivered; that the witness, Wolcott himself, while the caisson was building, inspected and supervised it so far as the metals and materials of which it was constructed were concerned, to see that they were of proper strength and quality. He had nothing to do with directing the construction of the caisson, or directing the workmen, or supervising the work; he simply tested it and examined it as an inspector to see whether or no the work had been properly performed; with the active prosecution of the work he had nothing whatever to do (pp. 58, 59).

Mr. Schild, in his reexamination (pp. 77 *et seq.*), testified:

Q. 23. Do you know whether or not these defendants, or either of them, have used any caisson gate for a dry dock, similar to the one represented in your patent?

A. No; I do not.

(Complainant introduces in evidence model representing the machine in use by the defendants, marked complainant's Exhibit C.)

Q. 24. State, if you know, what Exhibit C is, Mr. Schild.

A. That is a correct model of the caisson used at the Stone dry dock at the navy-yard at Mare Island, Cal.

Q. 25. Do you know what defendants have to do with the use of that machine? Have they anything to do with the use of that machine?

A. Yes, sir.

Q. 26. Whose control and charge is it in?

A. I believe it is in the control of the construction department of the navy-yard at Mare Island, and under the direct supervision of Commodore Belknap as commandant of the navy-yard at Mare Island.

Q. 27. Do you know what position Joseph Feaster holds at the navy-yard at Mare Island?

A. He is assistant naval constructor in charge of the construction repairing department.

Q. 28. Has he anything to do with this caisson gate?

A. I believe he is in charge of it at present.

Q. 29. What position does C. C. Wolcott hold, if any, at Mare Island?

A. He is the civil engineer.

Q. 30. As such, or in any other capacity, has he anything to do with that gate up there?

A. The gate was built under his superintendency.

Q. 31. Do you know whether or not he has any control or management over that gate as an officer of the Government?

A. Not directly; also, as the dock is not yet complete, he has charge of the building of the dock.

Q. 32. Do you know what position Jesse Diamond holds up there at Mare Island?

A. He was at that time in charge of the machinery, working the pumps, and at the same time of the caisson.

Q. 33. (By Mr. Cary.) "At that time," you say; what time was it?

A. Well, nearly two years ago.

Q. 34. (By Mr. Boone.) Do you know whether or not the gate has been in use at the dry dock at Mare Island?

A. I do not.

Q. 35. What use has it been put to?

A. For closing the entrance to the dock and keeping the water out of the dock so that men can work inside the dock on ships or on the dock itself.

So it seems that not even the complainant himself is willing to testify that these defendants, or either of them, have ever *used* this gate, although they have been in "control and charge" of it.

The complainant does confirm, however, the testimony of Mr. Wolcott, that whatever control, charge, custody, supervision, or authority of any kind the defendants, or either of them, have exercised over this property has been only in their official capacity as officers and agents of the United States.

Observe: It is the "caisson gate" as a part of the dock; as a distinct and substantive instrument of the Government, which the defendants, or some of them, have had in charge, and the demand of the complainant is—and the decree of the court has sanctioned and approved that demand—that because, perchance, there may attach to, or inhere in this distinct piece of Government property, this important and material instrument of the Government, some intangible, impalpable, inseparable property right of the complainant, that therefore, and on that account, a right of action accrues to the complainant against these defendants in their personal characters, because they, in the discharge of their official duty, are required to employ that instrument.

A confusion of ideas has led to this notion. A vulgar impression obtains that the Supreme Court of the United States has decided that any officer or agent of the United States having in his custody and under his charge and control property of the United States may be sued in the courts by any person claiming the right of possession or of title to such property, as against the United States.

The case of *United States* v. *Lee* (106 U. S., 196) is supposed to sustain this view. In that case Mr. Justice Miller, speaking for a majority of the court, said (p. 210):

> The case before us is a suit against Strong and Kaufman as individuals to recover possession of property. The suggestion was made that it was the property of the United States, and that the court, without inquiring into the truth of the suggestion should proceed no further. And in this case, as in that, after a judicial inquiry had made it clear that

> the property belonged to the plaintiff and not to the United States, we are still asked to forbid the court below to proceed further and set aside what it has done and thus refuse to perform the duty of deciding suits properly brought before us by citizens of the United States.

What the court decided there was that upon a suggestion that the property sued for was the property of the United States, the truth of such suggestion might be inquired into, and if found to be true the suit must abate; but if found to be false, the suit must be proceeded with to final judgment on the merits.

In *Cunningham* v. *Macon and Brunswick R. R. Co.* (109 U. S., 452) this court said:

> Another class of cases is where an individual is sued in tort for some act injurious to another in regard to personal property, to which his defense is that he has acted under the orders of the Government.
>
> In these cases he is not sued as or because he is the officer of the Government, but as an individual, and the court is not ousted of jurisdiction because he *asserts* authority as such officer. To make out his defense he must show that his authority was sufficient in law to protect him. (See *Mitchell* v. *Harmony*, 13 How., 115; *Bates* v. *Clark*, 95 U. S., 204; *Meigs* v. *McClung*, 9 Cranch, 11; *Wilcox* v. *Jackson*, 13 Pet., 498; *Brown* v. *Huger*, 21 How., 305; *Grisar* v. *McDowell*, 6 Wall., 363.)
>
> To this class belongs also the recent case of *United States* v. *Lee* (106 U. S., 196). For the action of ejectment in that case is in its essential character an action of trespass, with the power in the court to restore the possession to the plaintiff as part of the judgment. And the defendants, Strong and Kaufman, being sued individually as trespassers, set up

their authority as officers of the United States, which this court held to be unlawful, and, therefore, insufficient as a defense. The judgment in that case did not include the United States, as the opinion carefully stated, but held the officers liable as unauthorized trespassers, and turned them out of their unlawful possession.

In *United States* v. *Peters* (5 Cranch, 115), Chief Justice Marshall had said:

> In this case the suit was not instituted against the State or its treasurer, but against the executrixes of David Rittenhouse, for the proceeds of a vessel condemned in the court of admiralty, which were admitted to be in their possession. If these proceeds had been the actual property of Pennsylvania, however wrongfully acquired, the disclosure of that fact would have presented a case on which it is unnecessary to give an opinion. But it certainly can never be alleged that a mere suggestion of title in a State to property in possession of an individual must arrest the proceedings of the court and prevent their looking into the suggestion and examining the validity of the title.

In *Carr* v. *The United States* (98 U. S., 438), it was said:

> In some cases (perhaps it was so in the present case) it might not be apparent until after suit brought that the possession attempted to be assailed was that of the Government. But when this is made apparent by the pleadings or proofs, the jurisdiction of the court ought to cease. Otherwise the Government could always be compelled to come into court and litigate with private parties in defense of its property. (See, too, *Reagan* v. *Farmers' Loan and Trust Company*, 154 U. S., 389 *et seq.*, and *Virginia Coupon Cases*, 114 U. S., 288.)

The suggestion that the defendants here were acting not for themselves personally, but that each of them was acting in an official character for and on behalf of the United States and that his relation to the subject-matter was exclusively in such official character, was distinctly made as well in the pleas in abatement and to the jurisdiction of the court as in the answer to the bill.

The proof in the case support, without contradiction, the allegations made in the pleading. They not only show that the defendants were acting not in the exercise of their own volition or discretion, but as officers of the United States Navy, acting rigidly within the line of their official duty. But even further than this, that none of them *made* this caisson gate, and none of them *used* it, although some of them had it under their charge and control.

In 3 *Robinson on Patents* (sec. 910, p. 74) it is said:

> Officers of the United States, contractors on its public works, and others acting upon its behalf, *but guided by their own volition as distinguished from superior authority*, are also responsible for acts committed by them in violation of the patent, although the ultimate benefit of the infringement accrues not to themselves, but to the Government for which they act.

Observe here that responsibility is said to rest only upon those who act in the exercise of their own volition, and who are not controlled by superior authority.

In *Heaton* v. *Quintard* (7 Blatch., 73), Quintard was building a war vessel for the United States, under a written contract with the Government. The contract did not include the putting of a wooden armor outside of the iron

armor. The Navy Department, however, ordered such wooden armor to be put on. Quintard, the contractor, undertook as agent for the Government to procure such wooden armor and have it put on. He was proceeded against by Heaton, by a bill in equity, for relief against the infringement of Heaton's patent. Blatchford, J., in dismissing the bill, said:

> One of the defenses set up in the answer is, that as the wooden armor and outside plating were built in consequence of an order given for that purpose by the Secretary of the Navy, and were applied to a vessel built for the United States, and were paid for to the defendants by the Secretary of the Navy, the defendants are not liable for any value which such armor may have been to the United States. I think this is a good defense. To hold that workmen and employees of the Government who do work for it, upon a vessel owned by it, and are paid by it for doing such work, such work being done in a specific form by the orders of the Government, can be held liable in a court of the United States for infringing a patent by doing such work, would be in effect and and substance to allow the Government itself to be sued in the guise of a suit against its workmen, and would lead to embarrassments of the operations of the Government which might prove of serious detriment.

There would seem, then, to be hardly room for a reasonable doubt that when it was made apparent to the court below that the caisson gate, which it is claimed contained the patented invention of complainant, was built by the mind, and will, and means of the United States, and that the defendants were but only the instruments by which the

Government operated, that the caisson gate itself was the property absolutely and exclusively of the United States, it became the duty of that court at once to stay the proceedings against these defendants and to dismiss the bill as being in fact a proceeding against the United States, and so beyond the jurisdiction of the court.

Suppose it be true that the patented invention of the complainant had been appropriated and applied in the construction of this caisson gate. Whether so appropriated and applied, with or without the authority and sanction of the Government, can it be seriously maintained that such use of the patent would justify its owner in proceeding by injunction to restrain the officers of the Government from the continued use of the caisson gate? In what consequences would this view involve the Government? If it be true that these defendants are liable to be restrained by the injunctive process, it must, of course, be equally true of their successors in office through all time. And if it be true of this caisson gate at this particular navy-yard, it will be equally true of every caisson gate at every navy-yard of the United States, and more than that, it would be true of every public work and of every feature of every public work of the United States, wherever situate, into which a contractor, officer, or agent of the Government might through ignorance, carelessness, or design introduce the patented device of any citizen of the United States.

Mr. Justice Miller, in *Lee* v. *United States*, on page 217, said that "Many cases of imaginary evils have been suggested" as resulting from the doctrine of the

liability of the United States to be sued. But resort need not be had to the imagination here to discern the evils which must inevitably result from the doctrine that the officers and agents of the United States can be restrained by injunction from the prosecution of public works, which not only their official duty, but the very vital necessities of the Government, might require should be instantly performed.

It will hardly be denied that the United States was in exclusive possession of the Mare Island Navy-Yard, of its docks, and of all things appurtenant thereto. The officers of the Government having charge of that property stood in their relations thereto as receivers.

In *The Davis* (10 Wall., 21) this court said:

> The possession of the Government can only exist through some of its officers, using that phrase in the sense of any person charged on behalf of the Government with the control of the property, coupled with its actual possession. This, we think, is a sufficiently liberal definition of the possession of property by the Government to prevent any unseemly conflict between the court and the other departments of the Government, and which is consistent with the principle which exempts the Government from suit and its possession from disturbance by virtue of judicial process.

While it is undoubtedly proper that the enjoyment of the rights of property, which are secured to the citizen by the fundamental law, should be protected at least to the extent of not allowing the mere suggestion of Government ownership to be conclusive of his rights, it is none the less proper that the interests of all the citizens of this

country, as the same are represented by the Federal Government, should be protected against the irreparable loss that must ensue from allowing one of such citizens to arrest the operations of Government by restraining its officers and agents through a writ of injunction.

The order of injunction (Rec., p. 15) restrains the defendants or either of them—

> From making or using caisson gates, embracing the inventions or improvements set forth in the said letters patent No. 287178, and covered by the first and fourth claims therein contained, pursuant to the prayer of said bill of complaint; *and that this injunction is and shall be perpetual.*

That order stands unreversed and unimpaired by the final decree appealed from here. It renders the Mare Island Navy-Yard, so far as the docks are needful to its efficiency, utterly worthless.

Observe, the order does not restrain the defendants merely from using the complainant's patented device, it restrains them from using the "caisson gates." Now, the caisson gates are indisputably the property of the United States, built by them, at their expense, and for their use, and yet by this order these defendants, and equally their successors in office, are perpetually enjoined from using the Government's property for the Government's use.

In the new post-office building now being constructed in the Federal capital, the contractor, or it may be some Government officer or agent, may have insinuated into the building some patented device which pervades it throughout; some method, it may be, in the preparation of the cement of which its foundations are constructed; or some

architectural device inseparable from the plan on which the building is projected. Can it be possible that the completion of this important and needed public building can be obstructed and stayed by a writ of injunction awarded at the suit of the owner of such patented device against the individuals who are engaged in executing the expressed will of the Government?

On both these grounds then I respectfully submit, *first*, that the court should have dismissed this bill when it became apparent that the defendants were not independent agents of the Government effecting a prescribed end, but by means of their own selection but were the involuntary hands of the Government employing only the means which the Government afforded to accomplish the end which the Government required; and, *second*, that the court should not have awarded and certainly should not have perpetuated an injunction, which, while in form directed against the defendants individually, was in fact and in substance a restraint upon the Government itself. The decree here complained of should be reversed.

THE AMOUNT OF THE JUDGMENT.

Perhaps nothing could illustrate better the fallacy which characterizes the course of reasoning which led to this judgment than the amount for which it was rendered.

The master has found in his report (p. 20) that—

> The gains, profits, and advantages which have arisen and accrued to them since the 23d day of October, 1883, from infringing the exclusive right of complainant by the making *and* using of the improvement patented in the first and fourth claims of com-

> plainant's letters patent, No. 287178, amount to $40,000, and that *no damages in addition to said gains, profits, and advantages have been proved.*

And the court, in its final decree (p. 73), has confirmed this report and effectuated its findings. So, here it seems to have been adjudicated that no *damages* have been proven and that the "gains, profits, and advantages" result from the defendants having both made *and* used this patented invention.

I think it has been shown out of the mouth of the complainant himself, and certainly by such a preponderance of evidence as would have justified a court in setting aside the verdict of the jury, that these defendants, nor either of them, were in anywise concerned in the *making* of this caisson gate. Indeed, it appears that Admiral Belknap was not present on duty at the navy-yard until long after the caisson gate had been completed and delivered.

And yet this joint judgment for $40,000 has gone against him as well as against the others.

How much of it was for making and how much for using it is impossible to ascertain. But certain it is that the making has entered as an element into the amount of the judgment as much as the using.

But how was this amount of $40,000 ascertained, at any rate? The master, with a simplicity of candor which almost disarms attack, says on page 20:

> Accepting then Schild's undisputed testimony that the lowest sum for which a caisson gate, made according to Brown's plans, was $100,000, and that the actual cost of the caisson gate which was made and

> put up into use was, including cost of pump, $60,000, it appears that the gains and profits—that is to say, the saving—resulting to the respondents from the making of the infringing caisson gate amount to the difference between the sums mentioned.

Now, please observe: This report and this decree expressly exonerate these defendants from any claim for damages done by them to the complainant by reason of their alleged tortious act in infringing his patented right; but they hold and declare that these defendants shall pay to the complainants $40,000, because there has been a saving *to the defendants* of that sum in using Schild's device instead of Brown's.

Has there been a saving to the *defendants* of one cent in this transaction? Would the defendants have been out of pocket one cent if "Brown's plans" had been adopted at a cost of a million dollars?

The reasoning assumes two things, neither of which is true:

1. That if Schild's plan had not been adopted Brown's plan inevitably would have been.

2. That it made one farthing's difference to these defendants which of the two plans was adopted.

It has been shown from the evidence, and will not be gainsaid now, that these defendants had nothing to do with the selection of either plan; that they were not acting in the exercise of their independent judgment; that it was not left to them to select the means, or to determine the plans in accordance with which the means should be applied.

There is nothing in the evidence to justify the conclusion that the omission to use Schild's plan involved necessarily the adoption of Brown's plan. The evidence is abundant, however, and uncontradicted that these defendants were not acting for themselves, were not constructing these works at their own costs and charges; and that the profit or loss which might result from the adoption of one plan rather than another could not possibly fall upon them.

When the master and the court concurred in the view that "gains, profits, and advantages" resulted from the use of Schild's plan, they appear to have been carried away by the impression obtained from the rule stated in text-books and decisions, that what one man saves by the use of another man's patent is a just measure of the profit which he will be held to have derived and for which he must account, and to have lost sight altogether of another important and controlling element in the application of such a rule, and that is, who, exactly, is the person thus charged with the profit. What may be entirely true as between persons acting for themselves is not always to the same extent true of persons acting as public agents and officers.

Here it is manifest that if these defendants had not used (as it is alleged they did) Schild's patent, that they would not have been subjected to one cent's expense by the construction of a caisson according to Brown's plans. How, then, can it, with any regard to propriety, be said that there has been such a saving to them by the use of Schild's plan as that they can be held to have profited in this matter to the extent of $40,000?

While officers of the Army and Navy of the United States may not protect themselves against the consequences of wrongful acts committed by them under orders emanating from a source which is itself without authority, yet at most the consequences to which they expose themselves are *damages* for the wrong done by them, and not the profits, gains, and advantages which some one else may derive from such wrongful acts.

But again, a consideration of the master's report and the decree thereon will show that the $40,000 for which judgment was given was exclusively for the *making*, and not at all for the using, of complainant's invention.

The master shows (p. 20) that he arrived at this amount by this reasoning: It would cost the Government to build the caisson gate on Brown's plan, $100,000, while to build according to Schild's patent would take but $60,000, and the difference in the cost of building is $40,000, for which sum judgment is given. Obviously this $40,000 is for the making only, notwithstanding both the master's report and the final decree state that it is for both making and using.

We have heretofore seen that these defendants were not concerned in the *making* of this caisson gate. Some of them were not even on duty at the navy-yard when the gate was made. None are shown to have participated in the making of it.

The final decree shows that the $40,000 is for the making and using. Suppose the amount of this recovery to be paid on execution, or otherwise, and the injunction heretofore awarded and made perpetual should be dissolved,

and these defendants should continue to use, in like manner as they have heretofore used, this caisson gate, can they be held liable again at the suit of this complainant? Certainly, judgment and satisfaction for one trespass committed does not purchase for the trespasser immunity from damages for repetition of the trespass; yet, according to the measure of profit adopted here, the rule must be otherwise.

In *Whittemore* v. *Cutter*, 1 Gallison, Story, J., said:

> Now, admitting the plaintiffs recover in this action, there can be no pretense that thereby a legal right will pass to the defendant to use the machine made by him. Every future use will be an infringement of the plaintiff's patent, and, therefore, if the plaintiffs in this suit could recover such price, they not only would recover for materials and labor which they never furnished, and for a right of user which never passed from them, but also for that which might lawfully be the subject of another action, viz, the future use of the defendant's machine, so that there might be a double recovery for the same supposed injury.

ON THE ISSUES OF FACT.

The bill makes certain specific charges of matters of fact material to the maintenance of the case stated. It prays specifically for a discovery by the defendants on two matters which are presented in the form of specific interrogatories. It takes the prudent precaution, however, "to waive an answer under oath to the foregoing interrogatories and to the bill."

While this perfectly proper and allowable *coup* deprives the defendants of the benefit of their answer in their behalf and relieves the complainant of the burden of establishing the truth of his charges by the testimony of two witnesses, or one witness with corroborating circumstances, it does not relieve him from the ordinary burden of proving his case by a preponderating weight of testimony.

It is true that there was granted to complainant certain letters patent for certain inventions alleged to have been made by him; but such letters patent are by no means conclusive as to the novelty or utility of such inventions. It remains open to every one sought to be excluded from the use of such mechanical devices by these letters patent to show that the invention which the letters are claimed to protect were neither novel or useful; and that the patentee is not secured by such letters in the exclusive use and enjoyment of the invention.

The averment in the bill then—

> That the same was a new and useful invention, and consisted in the construction and combination of the various parts of the caisson gates, as fully described in the letters patent hereinafter referred to; that the same was not known or used by others before the invention thereof, as aforesaid by your orator. * * *

And the further allegation made that:

> The respondents herein (meaning the defendants) having full knowledge of the premises * * * have since the 23d of October, 1883, and before the filing of this bill of complaint, * * * manufactured and used, and still continue to use, in the

> State of California, caisson gates such as are described and claimed in said letters patent, and so secured to your orator—

Are each explicitly and positively denied in the answer and the burden of proving them is upon the complainant, The establishment of the truth of these two allegations. is material and essential to the maintenance of the bill.

I respectfully submit that a careful consideration of the testimony which was before the court below and is in the record here will show it to be utterly insufficient to persuade the unbiased judicial mind of the truth of either of these charges.

The only witnesses examined in this case were—

George F. Schild, who is the complainant;

Christopher C. Wolcott, who, since the 3d of February, 1888, was the civil engineer of the Navy, stationed at the navy-yard at Mare Island, and in charge of all the engineering work at the yard of yards and docks (p. 57), who is one of the defendants;

Calvin Brown, a civil engineer by profession, who had been a civil engineer at the navy-yard for nine years ending in 1881 (p. 45), and

George W. Dickie, who was the engineer and manager of the Union Iron Works (p. 113).

Of course, in weighing the testimony of these persons the personal equation in each case must be allowed its reasonable and proper effect. The self-interest, the intelligence, the bias, the opportunities of information must all be taken into account, in determining the two questions which will be briefly considered here.

1. *Was the invention novel and was it useful?*

> Novelty, therefore, exists unless the invention is already in the possession of the public as an operative art or instrument; and this occurs only when the invention itself is a matter of existing public knowledge, or is derivable from what is known without the further exercise of inventive skill. * * * Novelty consists in the substantial variation of the invention in question from all inventions which in contemplation of law are already open to the public. (1 *Robinson on Patents*, sec. 222, p. 305, and cases cited.)

The final decree (p. 72) declares the caisson gate made and used by the defendants was an infringement upon the first and the fourth claims of the letters patent of the complainant. These claims will be found on page 132, and are as follows:

> 1. A caisson or floating gait consisting of the plate A, having its bottom and ends shaped like and adapted to fit the entrance of the dock, lock, or harbor; the buoy or floating vessel or body B, secured to the top of the plate; the water tanks F, on each end of the body, and having outlets, *f*, above the surface of the water, and suitable valved openings in said body, near the water line, to admit water when the caisson is depressed by the full tanks, and to allow its escape when the tanks are drained through the outlets, substantially as herein described.
>
> 4. In a caisson or floating gate, the plate A, having its bottom and ends shaped like and adapted to fit the entrance of the dock, lock, or harbor, and the body B, for floating and sinking said plate, in combination with the double wicket gate G, covering on each side openings, G′, in said plate, and means for operating said gates, substantially as herein described.

> State of California, caisson gates such as are described and claimed in said letters patent, and so secured to your orator—

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These claims then appear to be, as is charged in the bill, of an invention "consisting in the *construction and combination* of the various parts of the caisson gates, etc."

In *The Corn-Planter Patent* (23 Wall., 224), Mr. Justice Bradley said:

> Where a patentee, after describing a machine, claims as his invention a certain combination of elements, or a certain device, or part of the machine, this is an implied declaration as conclusive, so far as that patent is concerned, as if it were expressed, that the specific combination, or thing claimed, is the only part which the patentee regards as new. (*Rowell* v. *Lindsay*, 113 U. S., 102, and cases cited).

Unless, therefore, it is shown that the defendants have adopted the entire combination claimed in complainant's specification of patent, they can not be held liable for an infringement. *Matteson* v. *Caine*, 8 Saw., 498; *Coolidge* v. *McCone*, 2 Saw., 576; *Sarven* v. *Hall*, 5 Fish., 427; *Dunbar* v. *Myers*, 94 U. S., 201; *Fuller* v. *Yentzer*, 94 U. S., 296; *Water Meter Co.* v. *Desper*, 101 U. S., 336; *Wicke* v. *Ostrum*, 103 U. S., 468; *Gage* v. *Herring*, 107 U. S., 640.

Mr. Wolcott, the civil engineer, had read to him by the master in chancery all the claims in complainant's specification of his patent, and he was asked to state which of the elements of those claims were to be found in the caisson gate at Mare Island; and on pp. 65–67 the witness points out clearly and specifically the points of difference between them.

The two general features which the Schild device and the Government device appear to have in common are a deep keel and a shallow floating body.

The deep keel covers the mouth of the dock.

The shallow floating body is adapted to easy sinking and rising to the end that the deep keel may be elevated or raised, as required.

Mr. Wolcott testifies (p. 101) that Mr. Schild, the complainant, told him that the deep-keel feature had been used abroad, in the river Weser in Germany. And although Mr. Schild was subsequently recalled and examined (p. 125), he did not attempt to correct or explain this.

Mr. Wolcott further testifies (p. 101) that in February, 1882, when he first went out to the Pacific coast, Schild showed him a drawing of a deep-keel caisson; and he then identifies on the witness stand, a blue print of the drawing, with a memorandum thereon in his own handwriting, "April, 1882," from which he knows that the drawing was made before that time.

Now, Schild's application for his patent was not filed until March 31, 1883.

Mr. George W. Dickie, the engineer and manager of the Union Iron Works, refers in his testimony (pp. 113–125) to several floating caisson gates, having the characteristic features of Schild's device, which he had seen and examined.

One was the floating caisson gate at Baltimore, Md. (p. 113–119), which was completed in October, 1880 (p. 121). Another was the gate at Hunter's Point (p. 120) and others at Dundee, Scotland, and Liverpool, England.

The complainant's device is designed to work automatically, in being filled with water to sink it and emptied of water to raise it, by means of air chambers, water tanks,

and valves, and without the aid of pumps either on the caisson or on the land (see claim 1, p. 132; see Schild's deposition, p. 35); while with the Government caisson the water is supplied and removed by pumps (p. 103).

Again, in order to avoid the appearance even of identity or similarity between the Schild device and the Government caisson, the Government authorities, by the advice of counsel, endeavored to remove from the Government caisson all the elements which seemed to be of Schild's invention, although not embraced in or protected by any patent to Schild. (See Wolcott's deposition, p. 60, and also 67.)

In his deposition on p. 89 Mr. Schild is asked part of question 31:

> Do you find in the defendant's machine anything that serves the purpose of your air chamber?
>
> Ans. No, sir; I find a pump.
>
> Q. 32. Do you understand the question? I asked you whether you find in the defendant's machine anything which serves the purpose of the air chamber that is in your caisson gate?
>
> Ans. I say no.
>
> Q. 33. Do you understand the question? You say the object of the air chamber in your machine is to produce buoyancy. Now is it necessary to produce buoyancy in the machine?
>
> Ans. No; not in one sense.
>
> Q. 34. Then what is the use of the air chamber?
>
> Ans. My air chamber in the patent is for the purpose of raising the caisson without any pump.
>
> Q. 35. Do the defendants raise their caisson gate without any pump?
>
> Ans. No; they use a pump.

Q. 36. Then, in that case, what do you find in the defendants' machine that serves the equivalent purpose of the air chamber in your machine?

Ans. I find a centrifugal pump.

Q. 37. That centrifugal pump is an immense large pump they use for emptying the dry dock, is it not?

Ans. No, sir; that pump is on the second deck of the caisson.

Q. 38. And used to pump the water out of it, is it?

Ans. Yes, sir.

Q. 39. What is it driven by?

Ans. By steam.

Q. 40. By a steam engine?

Ans. No; by steam furnace from a boiler on shore.

So as to the water tanks, Mr. Wolcott was asked p. 104, question 21:

Then I will ask you whether you find in the Mare Island caisson gate any equivalent of the water tanks and the outlets from the water tanks and from the vessel in complainant's machine?

Ans. No; as I said before, you have got to take the thing as a whole. * * *

Q. 25. What duty does the floating body perform in complainant's machine that is not performed in the caisson at Mare Island?

Ans. Schild's is an automatic machine.

Q. 26. Then the difference is, you have a pump which removes the water and allows the floation to take place, instead of the air chamber?

Ans. Yes; and I have another thing. The complainant's is a self-contained machine; the one at Mare Island is not.

(See continuation of this deposition, pp. 104–109.)

HOLMES CONRAD,
Assistant Attorney-General.

Office Supreme Court U. S.
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CLERK.

In the Supreme Court of the United States.

OCTOBER TERM, 1895.

IN RE GEORGE F. EMBLEN. Original. No. 9.

BRIEF ON BEHALF OF HON. HOKE SMITH, SECRETARY OF THE INTERIOR, IN OPPOSITION TO PETITION FOR A WRIT OF MANDAMUS.

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BRIEF ON BEHALF OF HON. HOKE SMITH, SECRETARY OF THE INTERIOR, IN OPPOSITION TO PETITION FOR A WRIT OF MANDAMUS.

This is an original application for a writ of *mandamus* directing the Secretary of the Interior to hear and decide a land contest. Having taken the petition under advisement, the court has given leave that it be filed, and has issued a rule to show cause, in pursuance whereof this brief is submitted on behalf of the respondent. The questions raised by the petition, if they may be regarded as still open, are fundamental and grave.

There being no statute regulating proceedings upon application for a writ of *mandamus*, they are regulated by the common law, and are clearly described in Tapping on Mandamus. The proceedings upon the return day of

the rule to show cause are in the nature of a motion. No formal demurrer is, of course, necessary or proper upon a motion; nor, indeed, may a demurrer be filed on behalf of the respondent even after the issuance of an alternative writ. Pursuant to what is understood to be the prevailing and correct common-law practice, no formal paper is filed on behalf of the Secretary of the Interior in response to the rule; but upon the considerations set forth in this brief the court is respectfully asked to dismiss the proceeding.

STATEMENT OF FACTS.

On February 26, 1885, one George F. Weed made and filed in the land office of the Denver land district, in the State of Colorado, a declaratory statement under oath, under the preemption law, alleging settlement by him upon a certain quarter section of land, which land is now included in the town of Yuma, Yuma County, Colo. Upon final proofs of settlement, improvement, cultivation, residence, etc., upon said land and the payment of the Government purchase price therefor the register and receiver of said district, on September 19, 1885, delivered to him a cash-entry certificate of purchase of said land, entitling him in due course to a patent therefor.

On October 4, 1888, no patent having been issued therefor, this petitioner, George F. Emblen, filed with said register and receiver his protest against the issuance of the patent, alleging fraud, misrepresentation, and perjury upon the part of said Weed, touching his alleged settlement and occupation of said land, etc. After hear-

ing the evidence and arguments of counsel, the register and receiver dismissed the protest; but on February 20, 1890, their action was reversed by the Commissioner of the General Land Office. Subsequently a rehearing was allowed; and, accordingly, the case came on before the register and receiver of the new land office at Akron, Colo. This receiver was personally interested in the result of the contest, by reason of a conveyance of a part interest from Weed. Emblen accordingly protested against the hearing of the contest by such receiver; and his protest, having been overruled, declined to appear before him or submit to his jurisdiction. The hearing was consequently *ex parte*, and the contest was dismissed November 4, 1890. The dismissal was affirmed on appeal by the Commissioner of the General Land Office and the Secretary of the Interior, who held the receiver not disqualified (*Emblen* v. *Weed*, 13 L. D., 722; 16 L. D., 28); but on August 25, 1893, this respondent, the Secretary's successor in office, ordered a new hearing (17 L. D., 220) for newly discovered evidence tending to show that Weed's residence had been a few days less than the necessary five months when he made his final proof (pp. 221, 223); holding also that the receiver was disqualified. The rehearing was delayed pending the appointment of a successor to the receiver at the Akron land office.

Meanwhile, the situation was changed by the enactment of the statute entitled "An act to perfect the title to a quarter section of land in the town of Yuma, Colorado," approved December 29, 1894, ch. 15. This statute provided that "the preemption cash entry numbered

forty-nine hundred and ninety of George F. Weed * * * be, and the same is hereby, confirmed; and that patent of the United States issue therefor to the said Weed."

"Solely in pursuance of said act, patent was issued to said Weed in February, 1895," and the Secretary of the Interior suspended all proceedings in said contest, and declined and still declines to authorize anything further to be done therein. It may be added that by 1890, as appears by the decision at 17 L. D., 220, to which petitioner refers the court, a town of several hundred inhabitants had been built upon the land, and these inhabitants were interested in sustaining Weed's entry; and that "if this entry should be canceled, many titles may be disturbed, and doubtless some innocent purchasers would suffer" (p. 225).

Petitioner has sustained heavy costs in conducting this contest, and claims a preference right of entry upon said land in case the contest should be successful. He claims that the act of December 29, 1894, is unconstitutional and void as against himself, urging that it takes away his vested rights without due process of law; that it is a bill of penalties; and that it denies to him the equal protection of the laws. The substantial relief asked by him in this proceeding is as follows:

> That a writ of *mandamus* issue, directed to the honorable the Secretary of the Interior, requiring him to proceed to the final adjudication and disposition of said contest in accordance with the general acts of Congress and the rules and regulations of the Land Department in that behalf made and

provided, or that he make return thereto, showing good cause, if any there be, why he should not be required so to do.

That upon final hearing and disposition of this cause a peremptory *mandamus* issue for the purposes aforesaid, and that judgment be rendered as right and justice may demand.

I.

This being an original application for a writ of mandamus against an officer of the Executive Department of the Government, this court is without jurisdiction.

"A writ of *mandamus* can only be issued from this court in aid of its appellate jurisdiction, except in a few enumerated cases." (*In re Green*, 141 U. S., 325, 326.) What are these cases?

The Judiciary Act of September 24, 1789, ch. 20, §13, gave this court power to issue—

> Writs of *mandamus* in cases warranted by the principles and usages of law to any courts appointed or *persons holding office* under the authority of the United States.

It was the case of *Marbury* v. *Madison* (1 Cr., 137), turning upon the constitutionality of this provision, which first definitely settled the proposition that an unconstitutional act could be held void by the courts. That case was an application very similar to the present, the respondent being the Secretary of State. This court held that, although the Judiciary Act clearly intended to give it jurisdiction over such applications, nevertheless the act was unconstitutional so far as it authorized such writs to be directed against officers of the Executive Depart-

ment, except in the cases where this court is given original jurisdiction by the Constitution. The opinion of Chief Justice Marshall, so far as it bears upon this point, is to be found at pages 173–176.

The correctness of this decision has been recognized in many subsequent cases, such as *McClung* v. *Silliman*, 2 Wheat., 369; *Ex parte Crane*, 5 Pet., 190, 193; *Ex parte Bradley*, 7 Wall., 364, 376; *Ex parte Newman*, 14 Wall., 152, 165; *Virginia* v *Rives*, 100 U. S., 313, 337.

Writs of *mandamus* are, of course, frequently directed to ministerial officers; but these are writs incidental to cases already pending in the courts.

The constitutional restrictions are recognized in the present form of the statute, Rev. Stat., § 688, which gives to this court power to issue—

> Writs of mandamus in cases warranted by the principles and usages of law to any courts appointed under the authority of the United States, or to persons holding office under the authority of the United States, where a State, or an embassador, or other public minister, or a consul or vice-consul, is a party.

This would seem to be a complete answer to the present application. As, however, there are other conclusive answers, we shall proceed to set them out.

II.

The act which the Secretary of the Interior is asked to perform is not a mere ministerial act within the meaning of the authorities, and therefore mandamus is not a proper remedy.

Assuming that this court has the same jurisdiction as the supreme court of the District of Columbia to issue a writ of *mandamus* against an executive officer, what are the rules by which it is to be guided?

The rules are indicated in the two leading cases of *Kendall* v. *United States* (12 Pet., 524), and *Decatur* v. *Paulding* (14 Pet., 497), decided in 1838 and 1840 respectively. In the various opinions filed in those cases will be found a discussion of the relative functions of the executive and judicial branches of the Government, to which little can be added.

The rules thus indicated may be stated as follows: The writ can issue only when the act sought to be directed is ministerial in nature, as distinguished from executive. An act is ministerial in nature when it is a single, simple, definite act, such as an intelligent child could perform. The law directing the performance of the act must be clear and unambiguous, for if there is an ambiguity to be removed by construction, then the duty of the officer is executive and not merely ministerial in nature.

It was upon the latter point that the discussion turned, and the main dissent arose, in this court in the Decatur case.

The Kendall case was the first in which the right to issue this writ against an executive officer was actually sustained. Upon the right to the remedy of *mandamus* by the principles of the common-law the court were unanimous (p. 626). The dissent was upon the question whether this common-law right could be enforced through the circuit court of the District of Columbia.

The case arose under a special act of Congress, submitting the relator's claim to the arbitrament of the Solicitor of the Treasury. It directed the Postmaster General to credit them with any sum which the Solicitor should find to be due. In other words, he was to write down on the credit side of their account the figures which the Solicitor should certify. Mr. Justice Thompson said (pp. 611, 613, 614, 624):

> Under this law the Postmaster General is vested with no discretion or control over the decisions of the Solicitor; nor is any appeal or review of that decision provided for by the act. * * * The act required by the law to be done by the Postmaster General is simply to credit the relators with the full amount of the award of the Solicitor. This is a precise, definite act, purely ministerial, and about which the Postmaster General had no discretion whatever. * * * He was simply required to give the credit. This was not an official act in any other sense than being a transaction in the Department where the books and accounts were kept, and was an official act in the same sense that an entry in the minutes of a court, pursuant to an order of the court, is an official act. There is no room for the exercise of any discretion, official or otherwise; all that is shut out by the direct and positive command of the law, and the act required to be done is in every just sense a mere ministerial act. * * * That this is a case in law is equally clear. It is the prosecution of a suit to enforce a right secured by a special act of Congress requiring of the Postmaster General the performance of a precise, definite, and specific act plainly enjoined by the law.

In the Decatur case, before the same nine judges, came up the question whether an act could be enforced as ministerial when the statute directing its performance was ambiguous and it involved the payment of money out of the public Treasury. Justices Story and McLean, while holding that Secretary Paulding had correctly interpreted the joint resolution under which Mrs. Decatur claimed a right in the navy pension fund, nevertheless said that the question of interpretation properly came up in a *mandamus* proceeding, the latter justice saying (p. 517):

> I differ from a majority of the judges, who hold that the construction of this resolution, giving to the relatrix a pension, is a duty in the discharge of which an executive discretion may be exercised. The law is directory and imperative, and admits of no discretion on the part of the Secretary.

Mr. Justice Baldwin was of the same opinion upon this point, and stated it very clearly (p. 606):

> If the right of the relator was in all other respects clear, except so far as they depended on the construction of the acts of Congress, the case was of judicial cognizance only. The duty of a Secretary is not judicial; it is not his province to construe laws.

Mr. Justice Catron put his concurrence mainly on the ground that the writ sought would force money out of the public Treasury, saying that the act directed in the Kendall case "was no more an official act than the making of an entry by a clerk by order of a court of justice," and adding: "Had it not been placed on this narrow ground the decision could not have been made" (p. 521).

Chief Justice Taney's opinion was concurred in by five members of the court. He expressly refused to consider the true construction of the joint resolution, saying (p. 517):

> As we have no jurisdiction over the acts of the Secretary in this respect, we forbear to express any opinion upon the construction of the resolution in question.

As one of the grounds for holding that the Secretary in considering Mrs. Decatur's pension was not acting ministerially, he named the fact that it involved the construction of ambiguous provisions, saying (p. 515):

> He must have exercised his judgment upon the construction of the law and the resolution, and have made up his mind whether she was entitled under one only or under both, and, if he determined that she was entitled under the resolution as well as the law, he must then have again exercised his judgment in deciding whether the half pay allowed her was to be calculated by the pay proper or the pay and emoluments of an officer of the Commodore's rank.

He also laid down the rule that presumptively the duties of Cabinet officers are executive and not merely ministerial (p. 515):

> In general, such duties, whether imposed by act of Congress or by resolution, are not mere ministerial duties. The head of an Executive Department of the Government, in the administration of the various and important concerns of his office, is continually required to exercise judgment and discretion. He must exercise his judgment in expounding the law and resolutions of Congress under which he is from

> time to time required to act. * * * If a suit should come before this court which involved the construction of any of these laws, the court certainly would not be bound to adopt the construction given by the head of a Department, and if they supposed his decision to be wrong they would of course so pronounce their judgment. But their judgment upon the construction of a law must be given in a case in which they have jurisdiction, and in which it is their duty to interpret the act of Congress in order to ascertain the rights of the parties in the cause before them.

These two cases have been set forth at length because they have ever since stood as the leading authorities, unaffected by any subsequent decisions, and because they were decided after most extended and able arguments, both in this court and in the circuit court of the District of Columbia. They doubtless give a narrower scope to the remedy of *mandamus* than is permitted in most of the States. But this narrowing of the remedy was based upon constitutional grounds, in order that the judiciary should not trench in the least upon the executive branch of the Government.

It may be remarked that the nine justices who sat in these famous cases were peculiarly fitted by experience to define the limits between the three great branches of the Government. They constituted a tribunal of very remarkable combined experience in political affairs, as well as in law. Chief Justice Taney had been both Attorney General and Secretary of the Treasury. Mr. Justice Story had been a Member of Congress and speaker of the Massachusetts legislature. Mr. Justice Thompson had been

Secretary of the Navy. Mr. Justice McLean had been Postmaster General and also Commissioner of the General Land Office. Mr. Justice Baldwin had had a very distinguished career in Congress. Mr. Justice Wayne had been one of the Administration leaders in the House of Representatives under President Jackson. Mr. Justice Barbour had been chairman both of the Judiciary Committee and of the Committee on Naval Affairs in the House, and finally its Speaker. Mr. Justice McKinley had been many years a member of the United States Senate. Of the nine members of the court Mr. Justice Catron was the only one who had not held high political office in the Federal Government. Five, it may be added, had been upon the bench in their respective States.

Since Kendall's time, only two writs of *mandamus* have been actually sustained by this court; one directing the delivery of a paper which the Secretary of the Interior unlawfully detained, the other directing the execution and delivery of a patent to which relator had been held entitled by the Commissioner, and which was being unlawfully withheld. (*United States* v. *Schurz*, 102 U. S., 378; *Butterworth* v. *Hoe*, 112 U. S., 50.) In *Commissioner* v. *Whiteley* (4 Wall., 522) Mr. Justice Swayne said, *obiter*, that the allowance of an appeal by the Commissioner of Patents would be a ministerial act, to enforce which a *mandamus* might issue. In *United States ex rel. Miller* v. *Black* (128 U. S., 40, 50) the court held that a rule to show cause should issue upon a petition setting forth that the Commissioner of Pensions refused to carry out an order of his superior, the Secretary of the Interior,

though the Commissioner had no discretionary powers in the premises, so that his function was ministerial; but on the return of the rule the petition was dismissed. (*Miller* v. *Raum*, 135 U. S., 200.)

The opinions in this case and in *United States ex rel. Dunlap* v. *Black*, also reported at 128 U. S., 40, clearly set forth the principle that an executive officer has the power to construe the laws relating to his work, and that error in law on his part will not justify the issuance of this writ; and the same conclusion was stated in a recent very able opinion of the court of appeals of the District of Columbia (*Seymour* v. *South Carolina*, 2 D. C. App., 240), the appeal from whose decision was dismissed by this court. (153 U. S., 353.)

Hence, in a *mandamus* proceeding against an executive officer, it is a complete defense that the performance of the duty involves the exercise of discretion, either in construction of an ambiguous law (*Brashear* v. *Mason*, 6 How., 92, 102; *Reeside* v. *Walker*, 11 How., 272, 289; *United States* v. *Guthrie*, 17 How., 284, 304; *Carrick* v. *Lamar*, 116 U. S., 423, 426; *United States* v. *Lynch*, 137 U. S., 280, 286; see also *Gaines* v. *Thompson*, 7 Wall., 347, 353), or in examination of parol evidence or affidavits (*United States* v. *Seaman*, 17 How., 225, 230; *United States* v. *The Commissioner*, 5 Wall., 563, 565; *The Secretary* v. *McGarrahan*, 9 Wall., 298, 312), or in considering the state of the Treasury (*Brashear* v. *Mason*, *supra*).

Even where the act is purely ministerial it will not be directed in a case of doubtful right. (*Redfield* v. *Windom*, 137 U. S., 636, 644.) "The obligation must be both

peremptory and plainly defined. * * * The duty must be 'clear and indisputable.'" (*International Contracting Co.* v. *Lamont*, 155 U. S., 303, 308.)

Does any argument seem necessary in applying these authorities to the present case?

Relator desires this court to direct the Secretary of the Interior "to proceed to the final adjudication and disposition" of a land contest. Is such adjudication and disposition a ministerial act? Is it a single and simple act, or is it a series of complicated acts, involving in a high degree the exercise of a judicial discretion?

The Secretary has failed to do so because he regards a certain statute and the issuance of a patent thereunder as ousting his jurisdiction. Relator claims that the statute is void as against himself. This depends upon facts *dehors* the statute. Is the examination of these facts and their application to the principles of constitutional law a ministerial act?

In this aspect the case is much like that of *United States* v. *Seaman*. (17 How., 225, 230.)

It may, however, be claimed that the proceeding may be sustained because it is one merely *directing*, not *controlling*, the exercise of executive discretion.

Analogy may be suggested to the writs of *mandamus* sometimes issued to inferior courts, directing them to hear and decide a case. The analogy does not hold good, however. Such writs are incidental to appellate jurisdiction or to the enforcement of judicial mandates. They are issued in cases which involve no constitutional distinctions

between the executive and the judiciary. In the appellate jurisdiction over inferior courts, court officers, etc., there is no rule confining *mandamus* to ministerial acts; it is commonly used to compel the performance of duties involving discretion, exercise of discretion being *directed* but not *controlled*. (*Ex parte Taylor*, 14 How., 3, 13; *Ex parte Flippin*, 94 U. S., 348; *Ex parte Burtis*, 103 U. S., 238.) But executive discretion can be neither directed nor controlled. (*Kendall* v. *United States*, *supra*, at p. 610; *Decatur* v. *Paulding*, *supra*, at p. 516; *Redfield* v. *Windom*, 137 U. S., 636, 644; *Boynton* v. *Blaine*, 139 U. S., 306, 319.)

The case of *Commissioner of Patents* v. *Whiteley* (4 Wall., 522) is precisely in point. The Patent Act of 1836 provided for a reissue in certain cases upon application of the inventor, or, "in case of * * * any assignment by him made of the original patent," to his assignees. Relator sought a reissue as assignee of all the rights in the patent except for Ohio and part of Illinois. The Commissioner refused to consider his claim because he was not the assignee of the whole interest in the patent. The supreme court of the District of Columbia held otherwise, and granted a writ of *mandamus* commanding him "to refer said application to the proper examiner, or otherwise examine or cause the same to be examined according to law." This court reversed the decision, Mr. Justice Swayne saying:

> The Commissioner found the question whether the assignee was such a one as the law entitled to a reissue lying at the threshold of his duties. It required an answer before he could proceed further.

His decision was against the appellant. His examination of the subject was thorough, and his conclusion is supported by an able and elaborate argument. It was made a part of his reply to the rule, and is found in the record.

From this decision, whether right or wrong, the relator had a right, under the statute, to appeal.

If the *mandamus* had ordered the Commissioner to allow the appeal, we should have held the order under which it was issued to be correct. But the order was that he should proceed to examine the application. That he had already done. *The preliminary question which he decided was as much within the scope of his authority as any other which could arise.* Having resolved it in the negative, there was no necessity for him to look further into the case. Entertaining such views, it would have been idle to do so. *The question* was vital to the application, and its resolution was fatal, so far as he was concerned. Only a reversal by the tribunal of appeal could revive it, and cast upon him the duty of further examination.

The principles of law relating to the remedy by *mandamus* are well settled.

It lies where there is a refusal to perform a ministerial act involving no exercise of judgment or discretion.

It lies, also, where the exercise of judgment and discretion are involved, and the officer refuses to decide, *provided that, if he decided, the aggrieved party could have his decision reviewed by another tribunal.*

It is applicable only in these two classes of cases. It can not be made to perform the functions of a writ of error.

A similar decision was made in *Litchfield* v. *Register and Receiver* (9 Wall., 575), upon a bill for injunction, a remedy correlative to that of *mandamus*. (*Gaines* v. *Thompson* (7 Wall., 347, 352.)

In *French* v. *Fyan* (93 U. S., 169, 173), Mr. Justice Miller, discussing a case where the Secretary of the Interior had failed to perform his duty under the swamp-land act, said:

> There was no means, as this court has decided, to compel him to act.

It is submitted that these cases are clearly correct upon principle. The powers of the Secretary in construing statutes are the same, whether the question of construction comes up upon a preliminary jurisdictional question or upon the merits of the case. In neither event, under the rule in *Decatur* v. *Paulding*, does he act ministerially. To treat a Cabinet officer as if he were an inferior court, to decide what cases he should hear and when he should hear them, to make up a docket of cases and decide when he should take them up for trial, would be to step over the very carefully marked limits of judicial power. Even if the court were in the highest degree competent to decide which of the enormous mass of cases overwhelming the Interior Department should be first taken up for consideration—even if the court were composed not only of the ablest jurists, but of men who had all been Secretaries of the Interior themselves, so that they had intimate personal knowledge of the difficulties of the situation—nevertheless it

is submitted that without a knowledge of the present circumstances of the Department, which can be gained only by being concerned in its present administration, the court would find itself unable wisely to determine what the Secretary should do next. In other words, it would find itself incompetent wisely to determine when such a writ should issue or how long a time should be given the Secretary to comply with it.

A rule applicable to the Secretary of the Interior would be applicable also to the Secretary of the Treasury. Its application in his case would be still more unfortunate. An immense amount of work of a *quasi* judicial character affecting private interests has been cast by legislation upon the latter officer. Often he is for long periods overwhelmed in official work, deeply interesting to the public as a whole and indirectly bearing upon the welfare of every citizen of the land. No greater blow could be dealt to public or private interests than by subjecting his order of business to the supervision of any court. In the words of Mr. Justice Catron in *Decatur* v. *Paulding*, *supra*, at page 521:

> The assumption of power need not be pushed further to let suitors enough into the court to consume the time and absorb the attention of the Secretaries; a principal business of theirs presently must be to sit at the bar of the court to ward off its mandate, and keep its officers from forcing the money out of the public Treasury, unless this court arrests the attempt.

The rules so clearly set forth in the Whiteley case have long been accepted. The right to interfere in a discre-

tionary case has never been held to exist elsewhere than in the exceptional case referred to by Mr. Justice Swayne, until the recent case of *U. S. ex rel Waters* v. *Carlisle*, decided without opinion by one of the justices of the supreme court of the District of Columbia, an appeal from whose decision was argued in the court of appeals December 9, 1895. The latest complete examination of the subject is in *Seymour* v. *South Carolina* (2 D. C., App., 240, 246), where the court says:

> Where the duty prescribed is plain and specific, admitting of no discretion, calling for the exercise of no judgment, and the officer charged therewith refuses to perform it to the injury or deprivation of the right of another, *mandamus* will lie to compel him to its performance. It will lie where the duties are discretionary or even strictly judicial, never, however, to revise action that has been taken, but to compel reception and consideration or the taking of jurisdiction; provided that when action shall have been taken the party aggrieved thereby would then have the right to appeal from the decision.

Who, then, are the officers that come within the exception, who can be required by *mandamus* to perform discretionary acts on the ground that an appeal lies from their decisions? The Secretary of the Interior certainly is not one of them.

Probably one illustration is the case of the Commissioner of Patents, from whose judgment in some instances an appeal lies to the court of appeals of the District of Columbia (formerly to the supreme court of that District). This is a very peculiar anomaly in our law, being a direct appeal from an executive to a judicial officer; a pro-

ceeding perhaps originally of doubtful constitutionality (See *United States* v. *Ritchie*, 17 How., 525, 533, 534), but which has been frequently recognized by this court. (*Commissioner of Patents* v. *Whiteley*, *supra*; *Butterworth* v. *Hoe*, *supra*; *Gandy* v. *Marble*, 122 U. S., 432, 440.) The courts having in this instance appellate jurisdiction over the executive, it impliedly follows that they may use the writ of *mandamus* in aid of this jurisdiction. Appeals from the old California board of land commissioners to the district court in that State may have been another illustration.

Possibly another case in which *mandamus* can be granted would be that of registers and receivers under the General Land Office. They are *quasi* judicial officers. If they should refuse to pass upon a case, it could not reach their superior, the Commissioner of the General Land Office. If they could not be reached by a writ of *mandamus* (and, indeed, they can not be at present, unless they come within the reach of the supreme court of this District) the citizen's only remedy would be to ask for their removal from office, and remarks like those in *United States ex rel. Miller* v. *Black* (128 U. S., 40, 52) would be in point.

There is a clear basis for a distinction in this matter between the highest executive officers, whose discretion can not be directed at all, and lower officers who can be directed to decide a case in order that an appeal may be taken. It is the subordinate's duty to pass the case on to the tribunal whose discretion really governs. He is not allowed to prevent a superior tribunal from giving an

opinion in the case. His own duty in the matter, while nominally discretionary, is really but formal; and it was for this reason that Secretary Noble sustained the jurisdiction of the Akron receiver in the present case, notwithstanding his pecuniary interest in the controversy.

Whether, however, the right to issue a writ of *mandamus* to perform a discretionary act has any application outside of the appellate jurisdiction of the courts, and of their jurisdiction to enforce their own mandates, is an unsettled question which need not be settled for the purposes of the present application.

III.

Petitioner can not have a writ of mandamus, because if his rights have been violated he has another remedy.

The principle that the writ of *mandamus* issues only when there is no other legal remedy has been well settled for over half a century. (*Kendall* v. *United States*, 12 Pet., at p. 614; *The Secretary* v. *McGarrahan*, 9 Wall., 298, 312; *Bayard* v. *White*, 127 U. S., 246, 250; *In re Pennsylvania Co.*, 137 U. S., 451, 453; *Redfield* v. *Windom*, 137 U. S., 636, 644; *In re Morrison*, 147 U. S., 14, 26; *Hudson* v. *Parker*, 156 U. S., 277, 288.) This principle applies not only to writs directed against executive officers, but to writs directed against inferior tribunals in aid of the appellate jurisdiction.

That the petitioner, if he has vested rights that have been violated, can redress them by bill in equity, even in the State courts, is equally well settled.

If the contest between Weed and himself had been finally heard and decided in the Interior Department he would be bound by the decision. He himself takes the position, however, that the decision of the Interior Department against him is not final; that the contest, but for the act of 1894, would be still pending and undecided. This, then, is the common case of a patent issued to one claimant in a proceeding to which another claimant is not a party, and by whose result the latter is not bound. It therefore comes within the general rule laid down by Mr. Justice Catron in *Garland* v. *Wynn* (20 How., 6), and often since repeated:

> The general rule is that where several parties set up conflicting claims to property, with which a special tribunal may deal, as between one party and the Government, regardless of the rights of others, the latter may come into the ordinary courts of justice and litigate the conflicting claims.

Among the many other cases to the same effect, some of them coming from State courts, we may cite *Lindsey* v. *Hawes* (2 Bl., 554); *Silver* v. *Ladd* (7 Wall., 219); *Meader* v. *Norton* (11 Wall., 442); *Rector* v. *Gibbon* (111 U. S., 276, 289); *Widdicombe* v. *Childers* (124 U. S., 400); *Cornelius* v. *Kessel* (128 U. S., 456); *Turner* v. *Sawyer* (150 U. S., 578, 586).

A well-known decision on this subject is to be found in *Johnson* v. *Towsley* (13 Wall., 72). In that case it was held that the action of the General Land Commissioner, although made expressly final by an act of 1858, was final for the Department only, and only "conclusive of the legal title." Johnson had the patent and Towsley had only a

"patent certificate" issued by the register and receiver of the land office. At his suit, however, the State courts of Nebraska decreed that Johnson should hold the patent as trustee for Towsley, and their decision was affirmed by this court, which held that the jurisdiction of chancery is limited by the decisions of the Interior Department only when those decisions represent the final decision, free from fraud or imposition, of that Department upon controverted questions, as in *Carr* v. *Fife* (156 U. S., 494, 501).

Among recent cases may be mentioned that of *Monroe Cattle Co.* v. *Becker* (147 U. S., 47). In that case defendant was the patentee, and the complainant, who was in possession, represented persons who had only filed applications and obtained receipts for the first payment. A bill in equity was sustained, and the patentee held to be trustee for complainant.

In *Ard* v. *Brandon* (156 U. S., 537) similar equitable relief was given (in an ejectment suit under the code system) to one who had acquired a right to make a homestead entry, although the local land officers had refused to receive the fees.

IV.

Petitioner has no vested rights.

He shows only that he has for some years conducted a contest against Weed and the persons claiming title under him, and in that contest has expended large sums of money. The contestant, however, at common law, and down to 1880, gained no rights by reason of contesting.

If the patent was set aside, a scramble ensued, and the lands became the property of the first person who succeeded in entering upon them.

In order to remedy this hardship, the act of May 14, 1880, ch. 89, gave a preference right of entry to a successful contestant. Section 2 is as follows:

> In all cases where any person has contested, paid the land-office fees, and procured the cancellation of any preemption, homestead, or timber-culture entry he shall be notified by the register of the land office of the district in which such land is situated of such cancellation, and shall be allowed thirty days from date of such notice to enter said lands: *Provided*, That said register shall be entitled to a fee of one dollar for the giving of such notice, to be paid by the contestant and not to be reported.

Petitioner, therefore, when he procured the cancellation of the Weed entry would have been entitled to a preference right of entry for himself. The statutes have given him no right prior to that time, and therefore he has no interest to complain of any disposition which Congress may make of the property. (*Frisbie* v. *Whitney*, 9 Wall., 187; *Yosemite Valley Case*, 15 Wall., 77; *Shepley* v. *Cowan*, 91 U. S., 330, 338; *Hosmer* v. *Wallace*, 97 U. S., 575; *Buxton* v. *Traver*, 130 U. S., 232; *Campbell* v. *Wade*, 132 U. S., 34.)

V.

The power of Congress over the public lands is unbounded so long as the claims of private persons thereto remain inchoate.

Under the constitutional "power to dispose of * * * the territory or other property belonging to the United

States," the right of Congress to deal with the public lands as it sees fit, by gift, sale, or otherwise, is clear. (*Frisbie* v. *Whitney*, 9 Wall., at pp. 192, 193.) It has been exercised without question from the earliest times, although the power to make direct gifts of moneys raised by taxation has been contested from the earliest times (Annals of Congress, June 3, 1790, pp. 1630–1632; January 10, 1794, pp. 170, etc.; January 28, 1794, p. 352; February 3, 1796, p. 288; December 28, 1796, pp. 1716, etc.), except when such gifts could be sustained under special powers, as in the case of the cod-fishery bounties (*id.*, Feb. 3, 1792, pp. 366, 369, etc.), and is still unsettled (*Field* v. *Clark*, 143 U. S., 649, 695).

This petitioner does not contest the general power to grant land to individuals, but claims that this grant was unconstitutional, because it interfered with his inchoate rights.

The case of *Frisbie* v. *Whitney* (9 Wall., 187) is closely in point. In *United States* v. *Vallejo* (1 Bl., 541) the court had held invalid the Mexican grant of the so-called Suscol ranch, which included the city of Benicia, the town of Vallejo, and the United States navy-yard on Mare Island. This decision was made in March, 1862. As soon as it became known in California that the Suscol ranch was public land, a rush was made to secure all of it that was valuable under the preemption laws. Whitney, the complainant, was one of those preemptioners. He took the necessary steps to entitle himself to a preemption claim, but the land officers refused to take his money because, meanwhile, Congress had enacted the act

of March 3, 1863, ch. 116 (12 Stat., 808), which provided that "individuals, bona fide purchasers from said Vallejo, or his assigns," might enter the land in the Suscol grant ranch at $1.25 per acre, "to the extent to which the same had been reduced to possession at the time of said adjudication of said Supreme Court." Under this act a patent was granted to Frisbie, who was a son-in-law of Vallejo and one of the numerous persons in possession under Vallejo's title. Whitney then brought a bill in equity to compel a conveyance of the land to himself, relying on such cases as *Lytle* v. *Arkansas* (10 How., 333). The lower court sustained his bill and decreed the conveyance prayed for. This court reversed the decision. Mr. Justice Miller, delivering the opinion of the court, after pointing out that complainant could sustain his bill only by showing that he had acquired a vested right prior to the act of 1863, and assuming that the lands were thrown open to preemptioners by the decision of 1862, proceeded as follows (p. 193):

> What had he done? He had gone upon the land, built a house and barn, and perhaps inclosed some of the ground. He had also applied to the register of the land office and offered to make a declaration that he had done these things with the intention of making a permanent settlement and claiming the land under the right of preemption. This is all. He had paid no money, nor had he then tendered any. The land officers refused to receive his declaration, and denied his right to preempt the land. He never has paid any money, has never received any certificate of preemption, and the register and receiver have never in any manner acknowledged

> or admitted his right to make preemption of that land. So far as anything done by him is to be considered, his claim rests solely upon his going upon the land and building and residing on it. There is nothing in the essential nature of these acts to confer a vested right, or, indeed, any kind of claim to land, and it is necessary to resort to the preemption law to make out any shadow of such right.

Distinguishing the cases upon which complainant relied, Mr. Justice Miller proceeds as follows (p. 196):

> The courts may very properly correct the injustice done by the land officers in refusing to accord rights, however inchoate, which are protected by laws still in existence; while they can only consider vested rights when those rights are sought to be enforced in opposition to the repeal or modification of the laws on which they were founded.
>
> The argument is urged with much zeal that because complainant did all that was in the power of anyone to do towards perfecting his claim he should not be held responsible for what could not be done.
>
> To this we reply as we did in the case of *Rector* v. *Ashly* (6 Wall., 142), that the rights of a claimant are to be measured by the acts of Congress and not by what he may or may not be able to do, and if a sound construction of these acts shows that he had acquired no vested interest in the land, then, as his rights are created by these statutes, they must be governed by their provisions, whether they be hard or lenient.

The authority of this case was attacked in the *Yosemite Valley Case* (15 Wall., 77), where a preemptioner in the Yosemite Valley, who had not yet, however, acquired a vested interest in the land, found himself cut off by the

act of June 30, 1864, ch. 184 (13 Stat., 325), ceding the valley to the State of California, to be held as a State park. The court, speaking by Mr. Justice Field, said (p. 88):

> The decision in *Frisbie* v. *Whitney* was pronounced by a unanimous court, and subsequent reflection has satisfied us of its entire soundness.

The principle was again applied, in *Campbell* v. *Wade* (132 U. S., 34), to a Texas statute, withdrawing from sale certain lands which plaintiff had taken the initiatory steps to acquire.

VI.

Assuming petitioner to have had a vested right in the property, had he a vested right to a rehearing by the Interior Department?

It will be remembered that the contest had been decided against him by the register and receiver, and, on appeal, successively by the Commissioner of the General Land Office and by the Secretary of the Interior. He then filed a motion for a rehearing. This motion was addressed to discretion. Neither a rehearing on the same evidence nor a new trial upon newly discovered evidence is matter of right.

While the respondent, as Secretary of the Interior, directed a new hearing by the register and receiver, this was done in the exercise of his discretionary power, and it was open to him, upon application by counsel for Weed, to reconsider his action and deny the rehearing. Under these circumstances the passage of an act of Congress cutting off the rehearing can not be called a disturbance of any vested rights.

It may be suggested that the whole proceeding in the Interior Department, after the first order for a rehearing in 1890, was void on account of the pecuniary interest of the receiver of the General Land Office. Upon this point the decisions of Secretary Noble and of this respondent were in conflict. (16 L. D., 28; 17 L. D., 220.) It is believed, however, that the question whether pecuniary interest on the part of a receiver is ground for disqualifying him is a question of propriety rather than one of jurisdiction. The principle of disqualifying interest has apparently not yet been extended from judicial to executive officers. Executive officers, like members of the legislature, are often obliged to act in matters where they or their relatives are pecuniarily interested; and do so. There is no provision, as in the case of judicial officers, for calling in somebody else. While, therefore, it is proper for the Secretary of the Interior to do as this respondent did—to direct that no interested person should sit as receiver in the hearing of a land contest—nevertheless it is believed that this ruling did not involve a holding that the prior decision of the disqualified receiver was an absolute nullity in point of law.

As the attempt to extend the principle of disqualifying interest as matter of law from judicial to executive officers is both important and novel, and as there seem to be other sufficient grounds upon which this case can be disposed of by application of well-settled principles of law, we do not discuss the question at length.

VII.

Mandamus is a writ directed against respondent as an individual, not in his official capacity. "It rests upon the averred and assumed fact that the defendant has neglected or refused to perform a personal duty" (*United States* v. *Boutwell*, 17 Wall., 604, 607); and hence he is individually made responsible for the costs (*United States* v. *Schurz*, 102 U. S., 378, 407).

Hence it has been held that the writ can not issue when defendant justifies himself by relying upon an act of the legislature, even if that act be unconstitutional; it being held that it is the duty of an executive officer to obey all laws without questioning their validity. (*Smyth* v. *Titcomb*, 31 Me., 272, 285, 286; see also *People* v. *Salomon*, 54 Ill., 39; *State* v. *Carroll*, 38 Conn., 449, 472–474; *Sessums* v. *Botts*, 34 Tex., 335.)

The point is not here pressed, because we understand this court to have decided to the contrary on the ground that "an unconstitutional law will be treated by the courts as null and void." (*Board of Liquidation* v. *McComb*, 92 U. S., 531, 541; see also *Huntington* v. *Worthen*, 120 U. S., 97, 101; *Norton* v. *Shelby County*, 118 U. S., 425, 442; *Poindexter* v. *Greenhow*, 114 U. S., 270; *Marbury* v. *Madison*, 1 Cr., 137, 180; 10 Op., 56, 61; 11 Op., 214; *Fisher* v. *McGirr*, 1 Gray, 1, 46.)

It is submitted, however, that upon the other grounds stated this proceeding should be dismissed.

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